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AN INTENSIVE STUDY OF TEACHING AIDS AT MIDDLE AND SECONDARY STAGES OF SCHOOLS

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FOREWORD

Several steps have been and are being initiated for improving the quality of education and for bringing about all round development of the personality of pupils. Among the investments in this direction the salient ones have been the remodeling of the curriculum, redesigning of the curriculum materials used by teachers and students, reorganisation of the teacher education programmes, restructuring of the operational strategies of curriculum transaction, reorientation of the techniques of evaluation and above all reallocation of financial, physical and infrastructural inputs While all these are important in their own right, the transaction of curriculum does occupy a crucial place in this process and herein the teaching aids have come to play a very significant role, both in accelerating the pace of learning and in ensuring its internalisation The importance of a study about the factual position with respect to the availability of different types of teaching aids in schools and the degree of their use can not be denied. What is presented in this document are the outcomes of an investigation on the subject.

The present study has been carried out on a four percent sample of Middle, Secondary and Higher Secondary schools from the four selected states, viz., Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh. The data was collected through the administration of a questionnaire covering different aspects of teaching aids; viz., the availability of different aids; the status of their working condition, use of aids in teaching of physical science, biological science, mathematics, social studies, language, fine arts and home science at middle and secondary stages. Information about the organisation of film shows, field trips etc., and other related information concerning

teaching aids was also collected. The study provides not only the status of different types of teaching aids in each of the states but also attempts to provide a comparative picture of the availability, usability and the degree of utilisation of teaching aids in classroom situations. Kerala being the educationally advanced and the remaining three as educationally backward states, the findings have prominently highlighted the gaps in this regard.

The State Departments of Education / State Councils of Educational Research and Training of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh extended their full cooperation and help in the completion of the tasks related to the investigation and we are thankful to them for the same.

I am thankful to Dr. Satvir Singh, Reader in the Department who has provided leadership to the project as its Principal Investigator and to Sh. O.P. Arora and Smt. Manju Trehan, Lecturers collaborated with him as co-investigators. The project team also deserves to be felicitated for the outcome of their efforts in the form of the present report.

I am sure that the findings of this study would prove to be of help to the educational planners and administrators, not only in planning operational strategies in future but also in overcoming the bottlenecks and impediments in our plans and programmes related to the identification and utilisation of teaching aids in schools with a view to constructively help the broad purposes of education.

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CHAPTER - I

INTRODUCTION

1.1 Preamble:

Quantitative expansion of education had but to be acompanied by qualitative improvement if the purposes of education are desired to be realised in the right earnest. Though a number of measures were initiated in India, towards this end and not much headway could be made inspite of all our good intentions . The major steps in this direction were attempted through in the remodeling of the curriculum, redesigning of curriculum materials used by teachers and students, reorganising teacher education programmes, restructuring of the operational strategies of curriculum transaction, reinforcement of the educational resources and facilities, reorientation of the techniques of evaluation and above all the reallocation of financial, physical and infrastructural inputs.

Shortcomings in our perspective planning, shortages in the availability of funds and resources, shortfalls in our teacher preparations and above all our lethargy in conscientious implementation of programmes could be enumerated as other salient handicaps.

The non-achievement of the desired level of success increasingly brought forward, the need for more intensive investment of efforts and energies towards paving the way for reaching our goals. Work therefore ceaselessly continued and is continuing for crossing over the speed breakers with steadiness and competence.

In the context of bringing home education to children while all inputs are important in their own right, those related to the transaction of curriculum do occupy a central place. This bring us to the techniques and tools of instruction pressed into service for transforming teaching into

learning. Teaching becomes successful only when learning takes place. Learning occurs through the absorption of ideas through senses. Senses react to external stimuli. External stimuli consist of pupil activities. The manipulation and organisation of these activities with a view to channeling them to the realisation of our objectives are , in fact, method of teaching. The most important foundation of the process is undoubtedly the identification and utilisation of apt, appropriate and adequate instructional instruments among which teaching aids come to play a very significant role both in accelerating the pace of learning and ensuring it internalisation.

1.2 A Situational Overview :

It is important to note that teaching aids are aids used by teachers and learners for reaching their goals. When a teacher has to use these aid he needs more planning and preparation as compared to the situation when h takes a lesson with the help of textbook, but his additional labour is always rewarded with more effective learning on the part of his pupils.

Teaching aids cannot replace the textbooks. In formal situations textbooks invariably form entity around which the whole teaching learnin process revolves. A good textbook with proper illustrations makes the reading interesting, faster and effective. These textbook illustrations constituting pictures, charts, maps, etc., are all teaching aids though sometimes they are not categorised as such.

Teaching aids could be audio or visual or both thus using the sense of hearing and/or sight. It has been established beyond doubt that direct experience of seeing brings home an idea or concept better than reading or hearing about them. It is therefore that the teaching aids have come to

assume an important place. As such , education can be rendered more effective with the help of aids. They also impart an element of permanency to learning.

With developments in science and technology new devices and materials have become available. These if judiciously used could make learning more meaningful, enjoyable, effective and lasting. Some of the commonly used teaching aids are enumerated below:

the chalkboard (black board),the magnetic chalkboard, the bulletin board, the flannel board.

charts, posters, diagrams, graphs, cartoons, maps, globes, photographs, pictures, paintings, flash cards , models, mock-ups, objects,specimens,dioramas ,toys.

projections with episcope, the tachistoscope, the stereo-projector, the overhead projector,the ceiling projector, the micro-projector,lantern slides, filmstrips,films.

tape recordings, radio broadcasts, television, gramophone records, micro-computers.

dramatizations; plays, pageants, tableaux, pantomimes, puppet shows, shadow plays.

field trips; historical monuments, industrial complexes, rivers and dams, agricultural fields.

The above list of teaching aids is not exhaustive in the sense that many new and innovative devices are entering the field every day.

1.3 Significance of Teaching aids in Learning:

In the past, when society was quite simple , the children could learn many things by direct experience in spinning, weaving and agriculture . But in the modern age, with galloping scientific and technological developments the society has not only become complex but also competitive . Thus only limited opportunities are available for offering direct

experiences of the above type. Learning through models or films or filmstrips can render complex things easier to learn about by bringing these within the reach of the learners comprehension.

Schools can educate children for life through improved methods of instruction using a variety of teaching aids which science and technolog has placed at their disposal. Teaching aids attract and hold learners attention, arouse their interest and pave the way for easy , effective a fast learning by whethering their imagination and whipping their learnin instincts.

The focal point of the educational system of today is child centere learning. That is possible only when he has motivation to learn. Teachin aids possess the potential of imparting this motivation through a change the routine activities of the school, by offering freer learning situatio rid of rigidity and routine. Aids that present situations for doing something by children become even more effective.

Another significant contribution of the teaching aids is that they make the experience of child more meaningful to the children.

Teaching aids possess the following potentials:

1. This stimulate interest.
2. They offer concrete basis for conceptual thinking .
3. They bring past' into present and cover the records of years ,centuries into short period of minutes .
4. They help in making learners a real audience of events occurring in various parts of world.
5. They break the monotony of rigid routine of the school and welcomed by students as a happy change in classroom.
6. They make classroom atmosphere lively and gay.
7. They make learning more permanent.
8. They provide motivation to children for consulting other sources of

information.

9. They help in maintaining the continuity of sequential events which is especially true of motion pictures.

10. They crystallise ideas.

11. They yield entertainment of an intellectual type.

1.4 Historical Development:

Although, teaching aids in education in the modern sense of the term is a movement of recent origin, though they have been in use in varied forms since times immemorial. In ancient times, in many situations, ideas were conveyed through drawings and symbols before a vocabulary to express them orally was evolved. Even alphabets of some languages are highly symbolic. In ancient India the vedic schools used diagrams drawn on palm leaves to explain to the pupils the rules for the construction of altars. The tradition of drawing pictures on palm leaves, which can be traced back from the 10th century A.D., continued for a long time in India. A Ramayana on palm leaves written in the 18th century has been discovered in Orissa. This document portrays illustrations on one side and is spread over 1200 leaves. Old Indian manuscripts on paper which are in existence today also contain valuable illustrations.

The beautiful carvings and mural paintings which we find in ancient architecture throughout the country clearly display the importance attached to these in those days.

Puppetry has been a popular art of entertainment in villages. Of late in India the use of puppets has considerably decreased because of theaters and cinemas but interesting puppets shows are still seen on special occasions in villages of Bengal and Rajasthan. These shows are generally presented on festivals or in fairs.

The Egyptian development of clay baked picture inscriptions leading to hieroglyphic writings , and utilisation of the flat and three dimensional images are the example of the early uses of the pictorial mode of communication. The Greeks used object materials while teaching history and civics. The Romans used visual aids to assist verbal instructions and it is here that we find people like Cicero (B.C. 106 - 43) and Seneca (app. B.C. 4 - A.D. 65) who approved and favoured visual teaching on the ground that man has greater faith in visual perception than in others.

Even the idea of motion in illusion was developed long before over modern illusory motion pictures by the use of images on temple pillars. During the middle ages (400 - 1400 A.D.) the church used statues , carvings and marionettes to teach its religious lessons to the people . During the period of renaissance (14th -16th century) puppets were used in popular instructions and entertainment.

In the mid 1600's the field of teaching aids has had sporadic growth and development . And it is through seventeenth century onwards that there appeared to develop a conscious and planned effort to render a programme of instruction in a more concrete form. The fundamentals of using concrete aids to learning are discussed in the work of Rousseau (1712 - 1778) , Pestalozzi ,Froebel (1782 -1852) ,Herbert and other early pioneers in education .

In India, the development in this regard, for the first time was in the year 1952 when a National Board for Audio-Visual Education was established. The main recommendations of this Board were; establishment of State Visual Boards, the production of educational films, the production of non-projected visual aids and use of aural aids in schools. In 1959 the Board approved the proposal for the establishment of a National Institute of Audio-Visual Education. The main purpose of this institute was to train

teachers in the preparation and use of audio-visual materials and to carry out evaluation and research in the effectiveness of these materials. Consequently on first of April, 1959 this institute started functioning in New Delhi. With the establishment of National Council of Educational Research and Training,on September, Ist, 1961, The National Institute of Audio-Visual Education was made a part of NCERT. Later on with the reorganisation of NCERT this Institute was renamed as Department of Teaching Aids but continued to serve the same objectives. Subsequently Audio visual education units also started functioning in different states as part of Departments of Education/ State Institute of Education/ State Council of Educational Research and Training.

With a view to giving a boost to the promotion of educational technology for improvement and spread of education in the country , the Central Institute of Educational Technology (CIET) was set up in May 1984, through the merger of the erstwhile Centre of Educational Technology and the Department of Teaching Aids of the NCERT. The CIET is now functioning as one of the constituent unit of the NCERT. On similar lines, State Institutes of Educational Technology (SIET) are also being set up in different states of India.

1.5 Recommendations of Committees/Commissions:

In India from time to time, certain committees and commissions on education reviewed the education system and recommended reforms of its various facets. These recommendations have been for improvement of curriculum, textbook, method of teaching, the system of evaluation etc. They realised that in order to improve the quality of teaching a good quality textbook, certain basic equipments and teaching aids are essential.

The Secondary Education Commission (1952 -53) mentioned that it is hardly necessary to emphasise the role that audio-visual aids, films and radio talks can play in the liberalising of the education of the school children. Through these aids the students get not merely theoretical instruction but a graphic presentation of the subject. The commission recommended that a central library of educational films should be available in each state and the film of great value be sent from the Central Government to the states periodically. It was further recommended that educational films suited to Indian conditions should be taken and made available to schools.

The Secondary Education Commission further mentioned that museum play an important part in the education of school children as they bring home to them much more vividly than any prosaic lectures, the discovery of the past and various developments that have taken place in many fields of science and technology. The Commission recommended for setting up of such museums in the schools.

The National Board for Audio-Visual Education in India in its second meeting held in May 1955 approved the following scheme for the Second Five Year Plan.

(i) Establishment of Audio-Visual Boards in states.

(ii) Establishment of film and filmstrip libraries on a state wise basis.

(iii) Introduction of Audio-Visual Education in Teachers' Training Institutes.

(iv) Supply of radio sets to High/Higher Secondary Schools.

(v) Supply of Audio-Visual Education mobile vans to all districts.

(vi) Publication of a periodical on Audio Visual Education.

(vii) Production of 35 mm. filmstrips.

(viii) Research in the area of films in education in cooperation with some selected institutions.

(ix) Encouragement of some private producers in the production of Audio Visual Aids and equipments.

The Education Commission (1964-66), inter-alia, recommended that:

(i) List of minimum teaching aids and equipments needed by each category of schools should be prepared and steps taken to provide the equipments to every school on a higher priority basis.

(ii) Education Departments should work with the All India radio for the use of radio lessons, supplemented by printed guide materials for teachers and pupils. Broadcasting of special radio talks specially designed for teachers in the mornings and evenings will help teachers in lesson preparation . Sophisticated form of newer techniques would not be suitable at present in the general run of schools but may be tried out experimentally in teacher training institutions.

(iii) Teachers should be helped and trained to rely on inexpensive and locally available or improvised teaching aids. Costly equipments could be shared by schools in a neighbourhood.

In order to achieve the universalisation of elementary education and to improve the quality of education, the National Policy on Education (NPE)-1986, duly passed by the parliament, specially mentioned that provision will be made for essential facilities in primary schools. These essential facilities included at least two reasonably large rooms that are usable in all weathers, and the necessary toys, blackboards, maps, charts and other learning material.

Under caption "Media and Educational Technology" the NPE-86 further envisaged that modern communication technologies have the potential to bypass several stages and sequences in the process of development encountered in earlier decades. With the latest advancements in this area both the constraints of time and distance have become manageable. In order to avoid structural dualism, modern educational technology must reach out to the most distant areas and the most deprived sections of beneficiaries simultaneously with the areas of comparative affluence and ready

availability.

In order to implement the National Policy on Education - 1986 an intensive exercise was undertaken by constituting 23 different Task Forces associating eminent educationists, experts and senior representatives of Central and State Governments. Various measures and Programmes have been suggested in the document, 'National Policy on Education 1986 - PROGRAMME OF ACTION'. In order to implement these programmes different steps are taken by the Central and State governments and other institutions involved in the process.

1.6 Review of The Related Literature :

Inspite of the aforesaid emphasis on the availability and utilisation of teaching aids in the teaching learning process, attempts made in this direction so far have not been adequate for realising the goals set. Even studies and investigations in the area have been insignificantly few. A few of these are reviewed below:

George (1966) undertook a study on teaching aids for award of Ph.D. degree. He studied the availability of teaching-aids, the attitude of teachers towards the use of teaching-aids, and whether the teaching of English with teaching-aids is more effective than the usual way of teaching. Data were collected by administering a questionnaire to randomly selected 200 schools of Kerala state. An experiment in actual classroom situation was also conducted in classes V , VI and VII . It was found that the majority of schools did not possess aids ,like, projectors,tape recorders and flannel boards. The aids, available in schools, were not properly used. Teachers did not use audio-visual aids because of heavy cost, heavy syllabus, insufficient number of aids, and lack of skill and special training. the percentage of specially trained teachers in audio-

visual education was only 6.06. The achievement of pupils taught by using audio -visual aids was found higher than those taught by the usual method.

Ahluwalia and Aggarwal (1970) studied the extent of use of films, filmstrips as a medium of instruction in secondary schools of Madras state. The necessary information was collected through a questionnaire from all the 448 schools which were having 16 mm film projectors. Out of these only 260 schools responded the questionnaire. The major findings of the study were; (i) 249 schools had 35 mm filmstrips projectors, alongwith 16 mm projectors, and 227 of them were in working order. (ii) The average annual frequency of using 16 mm projector was 10.3 times, and that of filmstrip projector was 12.9 times. (iii) On an average a school possessed 13 classroom filmstrips and 12 general strips. (iv) On an average a school borrowed 3.4 films from the Central Film Library and other sources. (v) 13.4 percent of schools had separate projection rooms. Of these 43 percent had satisfactory seating arrangement and 75 percent had light control system. (vi) More than half schools had technicians. (vii) In general local repair facility were nil. (viii) General feeling of the schools was positive towards the advantage of the films. (ix) Most schools preferred films in regional language, i.e., Tamil. (x) 42 percent of the schools preferred to have films in science subjects.

Aggarwal (1974) conducted a survey to find out the development of audio-visual education at Secondary Teachers Training Colleges in India. In all 110 colleges responded the questionnaire. It was found that the training colleges, in general, were poorly equipped. Only 72.5 percent possessed 16 mm projectors, 47.3 percent filmstrip projectors, 50 percent epidiascopes and only 3.6 percent overhead projectors.The position regarding the use of audio-visual equipment was found to be poor. They were

used very casually, mainly for the purpose of demonstration, etc. Important audio-visual aids were not available with most of the colleges. Only 45.4 percent of the colleges had films, 59.1 percent filmstrips, 40.9 percent slides and 52.7 percent models. Even the basic aids , like, chalk boards were not available with 18.2 percent of the colleges. As regards the physical facilities are concerned it was more or less non existent at most of the colleges. Only 34.5 percent had separate audio-visual rooms, 4.8 percent workshops, 10.9 percent graphic rooms, 9.1 percent photo labs, and 40 percent auditorium. Further only 26.3 percent of the colleges had the services of projectionists. In 33.6 percent of the colleges , there were lecturers who independently looked after audio-visual education.

Shah (1973) studied the scope, utility and limitations of educational television by selecting four nursery schools, thirty primary and middle schools, 113 higher secondary schools , four colleges of education, and eleven AIR and TV personnel. The tools used were: observation, interview schedule, and questionnaires. The main findings were: that the planning for TV lessons was not taken up well in advance. The quality and quantity of programmes had remained the same for a long period. The duration of twenty minutes for a programme seemed quite appropriate. The pamphlets and guidance notes were not available to the subject teachers in due time. The service and maintenance of TV sets was not quick and efficient. The TV had been confined to direct teaching . Educational personals were not involved in the planning , production and utilisation of school telecasts.

Rao (1972) undertook a survey of the growth and development of audio -visual education in Maharashtra state for award of Ph.D. degree. Out of a sample of 1500 secondary schools only 409 responded the questionnaire. It was found that use of graphic aids was : maps - 100 percent, flat pictures - 83 percent, photographs - 44 percent, charts - 40 percent, flash cards -

21 percent, graphs - 18 percent, and posters - 13 percent . The use of boards was : black board - 100 percent, bulletin board - 21 percent and flannel board - 45 percent. The use of three dimensional aids was : displays and exhibits - 12 percent, dioramas - 24 percent, objects - 57 percent, models - 88 percent, globes - 78 percent and specimens - 19 percent. The use of Audio - visual aids was : radio - 50 percent, gramophone - 25 percent and tape recorder - 15 percent. The use of projected aids was : epidiascope - 30 percent, 16 mm projector - 27 percent, magic lantern - 17 percent, filmstrip projector - 18 percent and microprojector - 8 percent. The use of activity aids was : field trips - 30 percent, puppet show and dramatisation - 19 percent, and demonstration - 16 percent.

Further it was found that Only 25 percent of the schools had A.V. trained teacher as incharge of audio-visual section. In the remaining schools it was managed by other teachers. Out of 409, about 300 schools spent less than Rs.1000/- per year on audio- visual aids. The study also revealed that 190 schools held exhibition in teaching aids proposed by pupils and teachers . 155 schools invited other schools to see the exhibition. In all 190 schools used teaching aids prepared by the teachers and pupils. The performances of students of standards V , VIII and X , who were shown the films (standard V -geography,and VIII,X - general science) during their course of study were higher than those who were not shown the films.

Fourth All India Educational Survey (1984) revealed that a large number of schools do not even have adequate number of blackboards as on 30th of September 1978. It was also further revealed that certain proportion of schools are not even having continuous supply of chalks. The

picture would be clear from the survey figures as presented below:

Table No.1.6.1
Schools Having Adequate Number of Blackboards and Continuous Supply of Chalks

	percentages of schools having					
	adequate no. of blackboards			continuous supply of chalks		
Area	Primary	Middle	Sec/Hr.Sec.	Primary	Middle	Sec/ Hr.Sec.
Rural	58.50	78.45	89.53	89.82	93.73	96.60
Urban	78.05	90.39	89.67	92.53	94.67	95.57
Total	60.28	80.39	89.58	90.07	93.83	96.25

Colani (1982) conducted a Ph.D. study about the availability of teaching aids by selecting a sample of 217 schools from Thane district of Maharashtra state. An experiment was also conducted in 20 schools to demonstrate the advantage of using teaching aids in few subjects , namely, social study, mathematics, science, and language. The major findings were ; (i) The sophisticated aids like tape recorder, radio, television and projectors were out of question for many schools due to high cost. (ii) Audio visual aids were not easily made available whenever required. (iii) Adio-visual trained personnel were rarely available. (iv) Some schools had projectors and few'films but due to non availability of technician the projectors were lying unused.(v) Very few schools had auditorium of their own but hardly used for showing films. (vi) The students learned better and sustained more interest when audio visual aids were used than without them.

From the studies, mentioned above it may be observed that the students learn better when teaching aids were used. Generally the samples of these studies have been very small and confined to a small geographical

area, viz., a particular district or a few institutions of a state. Barring a few the majority of the studies were related to the award of Ph.D. degrees. In view of these limitations there appears to be very limited scope in generalisation of their findings. The findings of these studies could provide only certain indicators. Keeping this in view it was decided to undertake a study which has not only larger sample of schools but also larger geographical coverage so that the findings could be more meaningful and generalisable.

The need , scope and objectives of the present study are detailed in the next chapter (captioned II).

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CHAPTER - II

THE NEED, SCOPE AND OBJECTIVES OF THE STUDY

2.1 The Need of The Study:

It would not be necessary to reiterate what has been detailed in Chapter -I, with respect to the significance of teaching aids in education. It has already been established beyond doubt that appropriate use of teaching aids by teachers to teach a particular subject content, not only motivates the learner by arousing his interest but also makes the learning experiences rich and permanent. In this regard , from time to time, several educationists, committees and commissions on education have ,inter -alia recommended to improve the methodology of teaching by applying proper tools and techniques through inservice and pre-service teacher training programmes. They have also recommended the provision of certain minimum number of teaching aids and equipments in each and every school for use. Recently considerable emphasis has also been laid on use of modern communication technologies. The developments in communication technology had encompassed the two constraints of time and distance, and hence had the power to reach the remotest school or child in the country. Though, in this respect definite steps have been taken by all those concerned with education, viz., educational planners, administrators and teachers. But, where do we stand today or what is the factual position in the schools is not known. Therefore a need was felt to undertake such a study on sample basis.

The studies carried out so far in the area of teaching aids have been very few and far between. These few studies have not only been very limited in terms of content but also in coverage. Therefore no

meaningful picture could be obtained particularly with respect to availability and extent of use of teaching aids in the schools. Another limitation of these studies has been that they have been attempted on a very small sample of schools. This situation was understandable as majority of them were undertaken for award of Ph.D. degrees. Obviously the research scholars, pursuing Ph.D projects, normally have very limited resources, like time, manpower and finances. Further the samples of schools under different studies were confined to a particular geographical area, like, a district of a state or at the most a state in the country. As such the findings of these studies could at most be considered as some kind of indicators. As such, they can not be rendered for proper generalisations. Therefore a need was realised to undertake a study, findings of which could be more generalisable and hence useful for future planning.

2.2 The Scope of The Study:

Needless to mention that a study of this nature should be attempted covering all educational levels right from primary to higher stages of learning. However it was felt that covering all such institutions would be a huge and unmanageable task. Therefore it was decided to restrict this study to only, two stages, i.e., the middle and secondary, of the formal school system.

As envisaged another important consideration of undertaking this study was to have a larger sample of schools covering larger geographical areas of the country. In view of this it was decided to include four states in such a way that they represent all the four different regions, i.e., north, south, east and west, of the country. Such a approach would not only provide a comparative picture between

different states but also would provide information for each region and for the nation as a whole. The main emphasis of this study would be to find out the factual position with regard to the availability of different types of teaching aids and their extent of utilisation in the teaching learning process. It was also considered important to study certain related aspects, like, organisation of other educational activities, viz., film shows, field trips, visit to museums, storage facilities for keeping teaching aids, provision of maintenance service of equipments, expenditure on teaching aids and other management related problems.

Title of The Study - An Intensive Study of Teaching-aids at Middle and Secondary Stages of Schools.

2.3 The Objectives of The Study:

The objectives of the study are mentioned as under :

(i) To find out the various types of teaching aids available and how many of them are in working condition.

(ii) To study the availability and use of different teaching aids in teaching of subjects, viz., physical science, biological science, mathematics, social studies, language, home science, music and fine arts.

(iii) To find out the position of other educational activities, like, organisation of film shows, field trips etc.

(iv) To study the procedure adopted in procurement of teaching aids, maintenance of their records and facilities for servicing of equipments.

(v) To study the amount of expenditure incurred on teaching aids for the previous three years and separate teaching aids fee charged from students.

(vi) To find out the position about the projection hall/room and teaching aids rooms in the schools.

(vii) To find out the position of teachers who had undergone inservice training programme of teaching aids.

(viii) To find out the additional teaching aids required by the schools for teaching different subjects.

In order to achieve the above mentioned objectives of the present study it was considered important to follow certain methodological steps needed in the process. The same have been discussed in the next chapter (Captioned III).

CHAPTER III

METHODOLOGY

In a research endeavor, methodology play an important part. A study attempted in a systematic manner on scientific lines would provide results which are reliable and valid. Thus such results would be more generalisable in order to help in planning and decision making processes. Therefore, it becomes imperative for a researcher to plan and rigorously follow various methodological steps involved in conducting an investigation. The major steps, generally,involved are ; (i) selection of suitable sample design, (ii) development of tools for collection of information (iii) organisation of the study and collection of data, and lastly (iv) scrutiny and analysis of data. How these steps were followed in the present study are detailed as follows.

3.1 Sampling Design:

In order to select a suitable sampling design first of all it was considered necessary to identify the target population and its characteristics. Since the present study was aimed at middle and secondary stages of the school, all such schools, having middle stage only, secondary stage only and both the stages,i.e. middle and secondary were considered as sampling units. These sampling units or schools in the present context are of different types. The middle stage may be a part of an independent upper primary school having middle stage only or a part of upper primary school having primary and upper primary/ middle stages. The middle stage could also be a part of secondary school or senior secondary school. Similarly a secondary stage may be a part of independent secondary school having secondary stage only or a part of secondary/ senior secondary school having different combination of stages, like, school with secondary and

senior secondary stages; school with middle,secondary and senior secondary stages; school with middle and secondary stages; school with primary, middle and secondary stages; and school with primary, middle, secondary and senior secondary stages. As such, all schools having middle and or secondary stages were considered as target population in the present study.

In order to select a representative sample of the population multi-stage stratified random sampling technique was applied. At the first instance the whole country was divided into four zones i.e North, South, East and West on the basis of geographical, social-cultural and economic aspects. Further, one state from each zone was selected. Three other similar studies of sample survey type on other aspects of education were also undertaken simultaneously. Therefore on the suggestion of ERIC secretariat that there should not be overlapping of states or studies, it was decided to select the four states, namely, Jammu and Kashmir, Kerala, Uttar Pradesh and Orissa, of the country. It may be noted that these states were exclusively included for the present study.

Each selected state was further divided into a number of regions, comprising a number of districts, on the basis of geographical and administrative considerations (as followed in National Sample Survey). Each region consisting of districts was considered a homogeneous group in terms of geographical, economical, administrative and other related aspects. Further, one district from each region was randomly selected to represent the characteristics of that region. As such, the districts finally selected for the study were as follows:

Table No. 3.1.1
List of Selected Districts

Sr.No. State	Region	(districts)		District selected
1. Jammu & Kashmir	I	Mountainous	(2)	1. Jammu
	II	Outer Hills	(4)	2. Udhampur
	III	Jhelum Valley	(8)	3. Baramula
2. Kerala	I	Northern	(5)	1. Kozhikode
	II	Southern	(7)	2. Ernakulum
3. Orissa	I	Coastal	(4)	1. Puri
	II	Southern	(3)	2. Karaput
	III	Northern	(6)	3. Mayurbhanj
4. Uttar Pradesh	I	Himalayan	(8)	1. Nainital
	II	Western	(19)	2. Meerut
	III	Central	(9)	3. Lucknow
	IV	Eastern	(15)	4. Varanasi
	V	Southern	(5)	5. Hamirpur

3.1.1 Sampling of Schools:

It was decided to select a four percent sample of schools from these four selected states. According to Fourth All India Educational Survey (as on 30th September 1978) the total number of such schools in four states was 33,756. The four percent of these were approximately 1350 schools. It was expected that some more schools might have come up after the year 1978 and there may be some non-response cases also while collecting information from them. Keeping these two aspects in view, it was decided to have a slightly larger number of schools in the sample. Thus, the number of institutions finally decided for the sample was 1400 schools. These 1400 schools were further proportionately allocated to four states. The statewise distribution was ; Jammu and Kashmir - 120 schools, Kerala - 220 schools, Orissa - 360 schools, and Uttar Pradesh - 700 schools.

The number of sampled schools fixed for a state were further distributed proportionately to each selected district considering the

Table No. 3.1.2
Schools Selected in The Sample

State	District(sample)	Area	Middle schools	Sec/Hr.Sec. schools with middle & sec. stages	Sec/Hr.Sec. schools with sec. stage only
Jammu & Kashmir	1. Jammu (44)	Rural	24	9	-
		Urban	4	7	-
	2.Udhampur(25)	Rural	17	5	-
		Urban	1	2	-
	3.Baramula(51)	Rural	33	12	-
		Urban	5	1	-
	Total (120)		84	36	-
Kerala	1.Kozikode(120)	Rural	76	12	7
		Urban	16	8	1
	2.Ernakulam(100)	Rural	41	25	2
		Urban	13	16	3
	Total (220)		146	61	13
Orissa	1.Puri (168)	Rural	116	8	27
		Urban	7	9	1
	2.Koraput (74)	Rural	55	3	7
		Urban	3	5	1
	3.Mayurbhanj(118)	Rural	86	3	24
		Urban	3	1	1
	Total (360)		270	29	61
Uttar Pradesh	1.Nainital (122)	Rural	65	25	-
		Urban	17	15	-
	2.Meerut (179)	Rural	76	55	-
		Urban	26	22	-
	3.Lucknow (84)	Rural	38	11	-
		Urban	11	24	-
	4.Varansi (226)	Rural	123	36	-
		Urban	34	33	-
	5.Hamirpur (89)	Rural	64	6	-
		Urban	9	9	1
	Total (700)		463	236	1
Grand Total	1400		963	362	75

further proportionately allocated to the rural and urban areas and then to the type of schools,i.e., (i) Upper Primary / Middle Schools , (ii)

Secondary / Higher Secondary schools with middle and secondary stages, and (iii) Secondary / Higher Secondary schools with secondary stage only. The necessary details of the schools finally selected as a sample for this study are given in Table No. 3.1.2.

3.1.2 Procedure Adopted for Selecting the Schools:

In order to select the sample of schools, as per the sampling design, it was considered necessary to have a sampling frame. The project coordinators in each of the states were requested to get a complete list of schools for each district separately alongwith information, like, Rural / Urban and type of schools. Accordingly six different lists of schools as given below were obtained.

(1) Rural Upper Primary Schools.
(2) Urban Upper Primary Schools.
(3) Rural Sec./Higher Secondary Schools with Middle and Secondary stages
(4) Urban Sec./Higher Secondary Schools with Middle and Secondary stages.
(5) Rural Sec./Higher Sec.Schools with Secondary stage.
(6) Urban Sec./Higher Sec.Schools with Secondary stage.

The required number of schools from each list were independently selected. For the purpose the major steps were as under :

Step - 1 : In the beginning it was ensured that a serial number starting from 1,2,3......etc. is assigned to each school in ascending order. Further, it was ensured that the list is complete in all respect and the duplicate cases if any removed from that list.

Step - 2 : For selecting a sample of schools from each list systematic random sampling technique was applied. For the purpose at the first instance the sampling interval was calculated. This was obtained as under:

The sampling interval K is defined as

$$K = N / n$$

where N is the total number of schools in the list
and n is the number of schools to be selected

In case the sample interval K was not found to be an integer it was rounded off to the nearest integer. A random number was selected with the help of random number table. With the help of this number a school was selected from the list of schools having serial numbers 1 to N. Sampling interval K was added to the first selected number and second school was selected. This process was repeated until n schools were selected. If end of list was encountered then it was continued to the beginning of the list to have exact n cases selected. In other words the list of schools was treated as circular and the method is known as Systematic Circular Sampling method.

Step - 3 : After the selection of schools under each category a new list of sampled schools was developed. Such a master list was found to be very useful for communicating with the school, monitoring of respondents, scrutiny and checking of information, and for all other practical purposes. The final list of sampled schools was available in a orderly fashion as under.

(1) Each district had a separate list of schools.

(2) Within a district the middle schools were listed first under rural category and then under urban category.

(3) The secondary and Hr.secondary schools were listed in the same order as mentioned at (2) above.

(4) All the schools in a district were listed with complete postal address (including the PIN CODE) and were assigned 3 digit serial numbers as school code. This code number was considered necessary not only for keeping the track of information at a later stage but also for carrying out the analysis of data on computer.

3.2 Tool Development:

In order to collect data from the sampled schools a draft questionnaire entitled " An Intensive study of teaching aids at middle and secondary stages of the school" was developed. This draft questionnaire was finalised through discussion in a meeting of faculty members of the department and experts in the area of teaching aids. The various aspects covered in the questionnaire were as follows :

1. Basic school information, like, name of the school, address, area, management, type of school, year of establishment, and classes with enrolment at middle and secondary stages.
2. Number of different types of teaching aids and equipments available in the schools and the number in working condition.
3. Availability and extent of use of teaching aids for teaching of different subjects, like, languages, mathematics, social studies, physical sciences, biological sciences, home science, music , and fine arts.
4. Maintenance of records, servicing of equipments, and purchase of teaching aids.
5. Organization of educational filmshows, field trips, etc.
6. Expenditure incurred on teaching aids for previous three years and separate fee charged from students for teaching aids.
7. Physical facilities,like, projection room /hall,teaching aids/ audio-visual room in the school.
8. Teachers undergone inservice training programme of teaching aids.
9. Additional teaching aids and equipments required by the schools.

The questionnaire was further suitably modified for facilitating the analysis of data with the help of computer. The questionnaire was tried out in eight schools located in Meerut district of Utter Pradesh. These schools were of different types, viz., middle schools, secondary schools and intermediate colleges. They belonged to both rural and urban areas. The main purpose of this try out was to see the workability of each and every

item in term of language as well as content. Any ambiguity which was pointed out by the respondents was separately noted by the investigators. These tried - out questionnaires were analysed and the ambiguities found were removed while preparing the final tool. The instructions for filling in the questionnaire were also improved. Since the data were to be computerised, a special care was taken in specifying the detailed instructions in that regard. Also, certain definitions of important teaching aids were provided to facilitate the respondent in filling in the questionnaire.

It was observed that most of the aids and equipments had English names which were generally known. Further, the respondents being principals / teachers who were highly qualified, would not have any difficulty in understanding the meaning of items written in English and in providing responses to them. Keeping this in view, it was realised that the questionnaire in English language would be alright for all practical purposes. So the sufficient number questionnaire were got printed in English. A copy of the questionnaire is enclosed for reference as appendix.

3.3 Organisation of The Study and Procedure of Data Collection:

The state governments of the selected states were requested to nominate a project coordinator from Department of Education or from the State Council of Educational Research & Training / State Institute of Education who could coordinate and supervise the various activities involved in the process of data collection. It was emphasized that the project coordinator should be of senior position (at least of Deputy Director rank) and should have sufficient experience, preferably in teaching aids. The necessary resources needed in collection of data were placed at their disposal. In terms of manpower provision of one Field

Assistant per district for a period of six months, was made.

All the four states expressed their difficulty in appointing Field Assistants for the purpose of data collection. They had a contention that these Field Assistants will be inexperienced persons and also due to short duration of appointment they will be less responsible in performing their assignment. As such the quality of data would not be ensured. Hence,they suggested that the existing staff already having sufficient experience would be more suitable for this job and they would undertake this responsibility in addition to their regular duties. It was also felt that with their assistance the data would be efficiently collected and would be of good quality also. The suggestion of project coordinators was agreed upon and subsequently implemented.

There were certain organisational difficulties faced at the time of collection of data. One major problem was that majority of the states took considerable time in nominating the project coordinators. Another problem faced was that in all the four states the project coordinators were either transferred or got retirement during the process of data collection. It took some time for the new person to understand and start the project work again. These problems gradually delayed the work of data collection.

In each state, one day orientation programme was organised for the officers involved in data collection. They were provided an up-to-date list of selected schools of their concerned districts. The required number of questionnaires alongwith some extra copies, for emergency purposes, were supplied to them.

3.4 Scrutiny and Analysis of Data:

The questionnaires received back from the respondents at the concerned state headquarters were scrutinised by the project coordinators for

completeness and accuracy of information. For the purpose a detailed guidelines for scrutinizing different items of information was provided. Any inconsistent or incorrect information provided in the questionnaire by the respondent was referred back for correction.

Table No.3.4.1
The Number of Schools Finally Included in the Analysis

State	District	(Sample)	Area	Middle schools	Sec/H.Sec schools with middle & sec. stage	Sec/H.Sec. schools with sec. stage only
1.Jammu & Kashmir	1.Jammu	(44)	Rural	22	8	1
			Urban	6	5	2
	2.Udhampur	(25)	Rural	17	5	-
			Urban	1	1	1
	3.Baramula	(49)	Rural	33	9	2
			Urban	4	1	-
	Total	118		83	29	6
2.Kerala	1.Kozhikode	(107)	Rural	73	7	6
			Urban	11	9	1
	2.Ernakulam	(92)	Rural	39	25	3
			Urban	11	12	2
	Total	199		134	53	12
3. Orissa	1.Puri	(168)	Rural	114	3	32
			Urban	9	5	5
	2.Koraput	(74)	Rural	51	8	4
			Urban	4	6	1
	3.Mayurbhanj	(118)	Rural	86	3	24
			Urban	3	1	1
	Total	360		267	26	67
4.Uttar Pradesh	1.Nainital	(121)	Rural	63	22	-
			Urban	21	15	-
	2.Meerut	(178)	Rural	75	57	-
			Urban	27	19	-
	3.Lucknow	(83)	Rural	38	12	-
			Urban	11	22	-
	4.Varanasi	(226)	Rural	142	36	-
			Urban	15	33	-
	5.Hamirpur	(76)	Rural	64	1	-
			Urban	7	4	-
	Total	684		463	221	-

Since the data analysis was to be done on computer, a coding design was prepared. Some of the codes like state, district and school were already developed in advance and the same were entered at the time of collection of information. The remaining part of coding was done centrally in the department. While assigning the code numbers the information was again checked and in certain cases non-responses and wrong responses were found. Some of the information which was found inconsistent was corrected with the help of another related item of information. The number of filled in questionnaires included for final analysis of data from different states are given in Table No. 3.4.1.

The data were transferred on magnetic media through Data Entry System. Certain validation checks were applied on this data to have it error free. These checks pertained to the basic identification variables, order of records and consistency of information with respect to related items. This cleaned data file was further subjected to the necessary analysis. For this purpose, a separate plan of analysis was made available to the Computer Centre.

The results of the study are presented and discussed in the next chapter (captioned IV).

CHAPTER IV

RESULTS AND INTERPRETATION

4.1 Description of Responding Schools:

The information received in the filled in questionnaire was analysed with the help of computer. It would be appropriate to discuss, the response rate and other characteristics of the responding institutions first of all. Out of the total sample of 1400 schools, from the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh, 1361 (97.2%) schools had responded to the questionnaire. The corresponding figures for rural and urban areas were 98.4 percent and 92.9 percent respectively. The response rate for the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh were 98.3 percent, 90.5 percent, 100 percent and 97.7 percent respectively. It may be observed that the response rate in all the four states is more than 90 percent which may be considered a very positive and high response rate.

It was observed that out of 1361 schools, 948 (69.7%) were middle schools and 413 (30.4%) were Secondary and Higher Secondary schools. Out of 413 Secondary and Higher Secondary schools, there were 73 schools which had secondary stage only for the purpose of the survey whereas the other schools had both the stages, viz., middle and secondary in them. It may not be out of place to mention that in the state of Jammu & Kashmir not a single school was available which had secondary stage only. The picture was more or less similar in the state of Uttar Pradesh.

In the state of Jummu & Kashmir all the schools were managed by the Government. But the picture in other states was totally different. Kerala had largest percentage i.e., 60.8 percent of schools were managed by private agencies whereas the remaining schools were managed by the

Government. In the state of Orissa also the highest percentage i.e 51.1 percent was of schools managed by private agencies and the lowest figure (7.5%) was that of schools managed by private agencies without any Government aid. The schools managed by Local body in the state of Uttar Pradesh had the highest proportion (48.3%) whereas the lowest figure (9.5%) was that of Government managed schools.

Table No. 4.1.1
Schools actually responded in the study

		Middle Schools		Seconary schools with secondary stage only		Sec./Hr.Sec Schools with Middle & Sec. stages	
State	Area	Sample	Responding	Sample	Responding	Sample	Responding
Jammu & Kashmir	Rural	74	74	0	0	26	25
	Urban	10	9	0	0	10	10
	Total	84	83	0	0	36	35
Kerala	Rural	117	112	9	7	37	33
	Urban	29	22	4	5	24	20
	Total	146	134	13	12	61	53
Orissa	Rural	257	257	58	58	14	14
	Urban	13	13	3	3	15	15
	Total	270	270	61	61	29	29
Uttar Pradesh	Rural	366	366	0	0	133	127
	Urban	97	95	1	0	103	96
	Total	463	461	1	0	236	223
Total	Rural	814	809	67	66	210	199
	Urban	149	139	8	7	152	141
	Total	963	948	75	73	362	340

Out of the 948 responding middle schools there were quite a large number of schools (113) which were more than 40 years old and 90 schools were established after 1980. The figure for secondary schools which were more than 40 years old was 73 (17.7%) whereas 49 schools came into existance after 1980.

The enrolmentwise distribution of the schools with respect to middle and secondary stages provides the relative size of the schools in rural and urban areas. There were 66.1 percent of rural schools which had enrolment up to 200 at the middle stage. The corresponding figure for urban areas was 44.3. As the enrolment increases the picture between rural and urban areas was reversed. That means the proportion of schools in urban areas was higher with regard to the larger enrolment as compared to rural areas. A similar picture was obtained between rural and urban schools having secondary stage.

4.2 Teaching aids Available in Schools and Their Working Condition:

The information regarding different types of teaching aids which were available in Middle schools and Secondary / Higher Secondary schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh was collected. Out of these available number of teaching aids, how many were in working order and what is the average number of these usable aids per school was also calculated . The same is discussed under separate sections as under.

4.2.1 Teaching aids in Middle Schools:

The most commonly used teaching aids which were available in more than 50 percent of Middle schools in any of the states of Jummu & Kashmir, Kerala, Orissa and Uttar Pradesh were black boards, charts, maps, globes, models and radios. Blackboards were available in all the schools of Jammu & kashmir whereas the percentage of schools having this aid were 97.0, 98.5 and 86.1 for the states of Kerala, Orissa and Uttar Pradesh respectively. It is interesting to note that about 14.0 percent of schools in Uttar Pradesh were not having blackboards in them. The average number of workable blackboards per school was 14.8, the highest, in the state of Kerala and

3.5, the lowest in the state of Uttar Pradesh. About 40.0 percent of blackboards (highest) in the state of Jammu & Kashmir were not in usable condition. The percentages of schools having charts in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh were 69.9, 90.3, 62.9 and 31.2 respectively. The highest figure of average number of usable charts per school was 19.7 for the state of Kerala and lowest figure, 6.3 was for the state of Orissa. About 27 percent of charts (highest) were not in usable condition in the states of Jammu & Kashmir and Kerala. The percentage of schools having maps were found to be 91.5, 97.0, 96.3 and 75.0 for the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. Here also the average usable number of maps per school was highest (11.3) in the state of Kerala whereas the lowest figure, 6.2 was for the states of Jammu & Kashmir and Uttar Pradesh. The highest proportion of unusable maps was 34 percent in Jammu & Kashmir. The states of Jummu & Kashmir, Kerala, Orissa and Uttar Pradesh had globes in 86.7, 95.5, 79.6 and 36.0 percent of schools respectively. The average number of usable globes per school was found to be more or less similar in all the four states. The state of Jammu & Kashmir had maximum number (40%) of globes in non working condition. Kerala had the highest percentage of schools (78.3) having models in them. The corresponding percentages for the states of Jammu & Kashmir, Orissa and Uttar Pradesh were 37.3, 13.3 and 9.1 respectively. The highest average number of workable models (13.2) was in Uttar Pradesh and the lowest in Orissa (2.7). The highest proportion of non workable models were 31.0 percent in the state of Jammu & Kashmir. Radio was found in 68.7 percent of schools, the highest, in the state of Kerala. The states of Jammu & Kashmir, Orissa and Uttar Pradesh had radios in 24.1, 15.2, and 2.6 percent of schools respectively. One radio per school was found to be in working

Table No.4.2.1

Middle Schools having teaching aids, average working per school and proportion in working order

Teaching aids	Jammu & Kashmir % having	Average w.order	% Working order	Kerala % having	Average w.order	% Working
1. Black Board	100.0	6.7	60.3	97.0	14.8	90.5
2. Rollup Blackboard	26.5	2.6	77.0	46.2	1.7	84.9
3. Bulletin Board	15.7	1.1	83.3	21.6	1.1	72.1
4. Flannel Board	2.4	0.5	50.0	8.2	1.9	53.8
5 Flannel graphs	0.0	0.0	0.0	1.5	0.5	12.5
6. Charts	69.9	10.3	73.6	90.3	19.7	73.3
7. Graphs	0.0	0.0	0.0	21.6	3.7	73.8
8. Pictures/ Photographs	24.1	5.3	89.2	50.0	16.2	89.9
9. Maps	91.5	6.2	66.1	97.0	11.3	76.1
10. Posters	6.0	4.6	21.7	6.7	16.3	81.7
11. Diagrams	1.2	2.0	100.0	26.1	9.8	95.3
12. Cartoons	1.2	15.0	100.0	3.7	8.2	78.8
13. Comic Strips	0.0	0.0	0.0	1.5	2.0	66.7
14. Globes	86.7	1.0	60.5	95.5	1.6	77.5
15. Models	37.3	3.1	69.1	78.3	7.4	90.6
16. Specimens	2.4	36.5	100.0	38.1	12.4	76.1
17. Mockups	0.0	0.0	0.0	3.7	1.4	53.8
18. Puppets	0.0	0.0	0.0	6.7	2.3	91.3
19. Radios	24.1	1.0	53.3	68.7	1.0	77.7
20. Tap recorders	0.0	0.0	0.0	3.7	2.6	92.8
21. Cassettes	0.0	0.0	0.0	3.0	6.2	100.0
22. 16mm film projector	0.0	0.0	0.0	0.0	0.0	0.0
23. Opaque projectors	0.0	0.0	0.0	1.0	1.0	100.0
24. Overhead projectors	0.0	0.0	0.0	0.0	0.0	0.0
25. 35mm film-cum-slide projector	0.0	0.0	0.0	3.0	1.0	100.0
26. Slides	0.0	0.0	0.0	7.5	7.8	100.0
27. Flash cards	1.2	34.0	100.0	38.1	33.3	92.3
28. Films	0.0	0.0	0.0	3.7	41.0	87.2
29. Film strips	0.0	0.0	0.0	3.7	11.4	91.9
30. Televisions	3.6	1.0	100.0	0.0	0.0	0.0
31. Video Cassette players/recorders	0.0	0.0	0.0	0.0	0.0	0.0
32. Video cassettes	0.0	0.0	0.0	0.0	0.0	0.0
33. Micro-computers	0.0	0.0	0.0	0.0	0.0	0.0
34. Floppy Discs	0.0	0.0	0.0	0.0	0.0	0.0

Table No. 4.2.1 (Contd.)
Middle Schools having teaching aids, average working per school and proportion in working order

Teaching aids	Orissa % having	Orissa Average w.order	Orissa % Working order	Uttar Pradesh % Having	Uttar Pradesh Average w.order	Uttar Pradesh % Working order
1. Black Board	98.5	3.7	92.8	86.1	3.5	79.9
2. Rollup Board	26.3	1.6	79.8	17.6	2.3	88.4
3. Bulletin Board	1.5	1.0	100.0	4.9	1.6	87.8
4. Flannel Board	0.8	1.0	100.0	0.2	1.0	100.0
5 Flannel graphs	0.4	1.0	100.0	0.6	2.3	87.5
6. Chart	62.9	6.3	83.5	31.2	14.1	76.2
7. Graphs	9.6	2.6	100.0	3.7	5.2	90.7
8. Pictures/ Photographs	27.0	6.0	99.5	9.5	8.2	68.7
9. Maps	96.3	6.9	78.1	75.0	6.2	72.7
10. Posters	9.3	5.8	100.0	6.5	8.8	69.8
11. Diagrams	0.8	8.0	100.0	3.9	10.2	85.5
12. Cartoons	1.1	0.0	0.0	0.6	1.0	42.9
13. Comic Strips	0.0	0.0	0.0	0.9	2.2	75.0
14. Globes	79.6	1.1	85.6	36.0	1.0	76.4
15. Models	13.3	2.7	97.9	9.1	13.2	95.0
16. Specimens	1.8	8.4	100.0	4.9	20.3	96.5
17. Mockups	0.0	0.0	0.0	0.0	0.0	0.0
18. Puppets	0.7	2.5	100.0	0.8	2.5	90.0
19. Radios	15.2	1.1	90.0	4.1	0.8	80.0
20. Tap recorders	0.0	0.0	0.0	2.6	0.9	52.3
21. Cassettes	0.0	0.0	0.0	3.0	9.2	88.3
22. 16mm film projector	0.0	0.0	0.0	0.0	0.0	0.0
23. Opaque projectors	0.4	1.0	100.0	0.0	0.0	0.0
24. Overhead Projector	0.0	0.0	0.0	0.0	0.0	0.0
25. 35mmfilm-cum-slide projector	0.0	0.0	0.0	0.2	1.0	100.0
26. Slides	0.4	0.0	0.0	1.3	9.8	77.6
27. Flash cards	0.0	0.0	0.0	0.4	7.5	57.7
28. Films	0.0	0.0	0.0	0.0	0.0	0.0
29. Film strips	0.0	0.0	0.0	0.4	10.0	40.0
30. Televisions	0.4	1.0	100.0	1.7	1.0	100.0
31. Video Cassette players/recorders	0.0	0.0	0.0	0.2	2.0	100.0
32. Video cassettes	0.0	0.0	0.0	0.2	1.0	100.0
33. Micro-computers	0.0	0.0	0.0	0.0	0.0	0.0
34. Floppy Discs	0.0	0.0	0.0	0.0	0.0	0.0

condition in all the states. The state of Jammu & Kashmir had the largest number (47%) of radios in non working condition.

The other teaching aids, namely, rollup blackboards, bulletin boards, graphs, picture/photographs, diagrams, specimens and flash cards have got the second position as the percentages of schools having these aids lies between 20 to 50 percent of schools. The rollup black boards were available in 26.5, 46.2, 26.3 and 17.6 percent of schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The figures of average number of workable rollup black boards per school were 2.6, the highest, in the state of Jammu & Kashmir and 1.6, the lowestin the state of Orissa. The highest number of non workable rollup black boards was 23.0 percent in Jammu & Kashmir. The schools in Kerala had highest proportion i.e., 21.6 percent who possessed bulletin boards. The proportions for the state of Jammu & Kashmir, Orissa and Uttar Pradesh were 15.7, 1.5, and 4.9 percent respectively. The average number of workable bulletin boards were between 1 to 1.6 per school. About 28 percent, the highest, of bulletin boards were found to be in non workable condition in the state of Kerala. Graphs were available in highest proportion of schools (21.6%) in the state of Kerala. Orissa , Uttar Pradesh and Jammu & Kashmir had graphs in 9.6, 3.7 and zero percent of schools respectively. The highest average number of usable graphs was 5.2 in Uttar Pradesh and lowest 2.6 in Orissa. Kerala had the maximum number (26%) of graphs in non working condition. The percentages of schools having pictures/ photographs were 24.1, 50.0, 27.0 and 9.5 in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The highest average number (16.2) per school was in Kerala whereas the lowest figure was 5.3 in the state of Jammu & Kashmir. The highest proportion of non usable pictures/photographs were found to be 31.0

percent in Uttar Pradesh. Diagrams were available in 26.1 percent of schools in Kerala and in the remaining three states, viz., Jammu & Kashmir, Orissa and Uttar Pradesh,the number of schools having diagrams was very small. The average number of workable diagram in Kerala was 9.8. Out of the total diagrams, only 5 percent were found in non workable condition. Specimens and flash cards were available in 38.0 percent of schools in the state of Kerala alone. The average number of specimens and flash cards per school were found to be 124 and 33.3 respectively. About 24 percent of specimens and 8 percent of flash cards were found in non workable condition in this state.

The modern aids, like, 35 mm film strip- cum slide projector, films, filmstrips, slides and tape recorders were found in a very small fraction of schools. Generally these aids were found in the state of Kerala and in few schools of Uttar Pradesh. Television was found only in 3.6 percent of schools of Jammu & Kashmir and 1.7 percent of schools of Uttar Pradesh .Whereas Video cassette player/recorder was available only in 0.2 percent of schools in Uttar Pradesh. The aids, like, micro-computer, overhead projector and 16 mm projector were not found in any middle school of the four states.

In order to compare the position of teaching aids between the rural and urban areas in each state, a particular aid which was available in more than 50 percent of schools in any of the states was considered. The results are discussed for each state separately as under.

In the state of Jammu & Kashmir it was found that though blackboards were available in all the schools but the average usable number per school was found to be higher (11.1) in urban schools as compared to rural schools (6.1). The charts were found to be in 77.8 percent of urban schools whereas the corresponding figure for rural schools was 68.9 percent. The average

number of workable charts per school in urban areas was 16.6 as compared to 9.5 of rural areas. Though the percentage of schools having maps was 91.9 in rural areas as compared to 88.9 percent of urban areas but the picture of average number of usable maps per school was in the reverse order (urban 8.4, rural 6.0). As regards the globes were concerned the percentage of schools having them in urban areas was found to be 88.9 comparatively higher than the rural areas (86.5). The average number of workable globes was found to be the same (1.0) in both areas. Models were available in 77.8 percent of urban schools and 32.4 percent of rural schools. The average workable number was found to be 3.4 and 2.1 of rural and urban schools respectively.

Kerala state had blackboards in all the schools of urban areas whereas in rural areas 96.4 percent of schools had blackboards in them. The average number of workable blackboards per school for urban areas was 12.8 as compared to 15.2 of rural areas. Rollup blackboards were available in 54.5 percent of urban schools and 44.6 percent of rural schools. The average workable number of rollup blackboards per school was found to be higher in rural areas (2) than 1.2 of urban schools. Charts were available in 86.4 percent of urban schools whereas the corresponding figure for rural schools was 91.1 percent, 23.0 was the average number of usable charts per school in urban areas which is higher than that of rural schools (19.1). Graphs were available in 50.0 percent of urban schools as compared to 16.1 percent of rural schools. Similarly the average number of graphs per school in urban areas (4.1) was found to be higher than rural schools (3.4). Pictures/photographs were available in 59.1 percent of urban schools and 48.2 percent of rural schools. The average usable number of pictures/photographs per school was found to be 17.6 in rural schools and

10.4 in urban schools. The figures for rural schools (97.3%) having maps was found to be higher than that of urban schools (95.4%). The average number of maps per school in rural and urban areas were found to be 10.1 and 17.5 respectively. Globes were found in equal proportion of schools (96.5 %) both in rural and urban areas. The average number of globes per school was also more or less same in rural and urban schools. Models were available in 70.7 percent of rural schools as compared to 81.8 percent of urban schools. The average workable number per school was found to be 7.5 and 6.9 for rural and urban schools respectively. Specimens were available in 34.8 percent of rural schools whereas the corresponding figure for urban schools was 54.5 percent. The average number of specimens was found to be 13.9 for rural areas and 7.4 for urban areas. Radios were available in 81.8 percent of urban schools as compared to 66.1 percent of rural schools. The average numberof radios per school (1.4) in urban areas was found to be higher than that of rural areas (0.8). 35.7 percent of rural schools had flash cards in them and the corresponding figure for urban areas was 50.0 percent. The average number per school was 34.6 for rural areas and 28.5 for urban areas.

Orissa state had blackboards in 98.4 percent of rural schools whereas all the schools of urban areas had blackboards. The average number per school in urban areas (7.0) was found to be higher than rural areas (2.5). The figure for availability of charts and average per school in urban areas were 69.2 percent and 8.3 which were found to be higher than the corresponding figures i.e., 62.7 percent and 6.2 of rural schools. Similarly the figure for availability of pictures/photographs and average number per school (61.5 % and 15.9) were found higher in urban areas schools than the corresponding figures of 25.3 percent and 4.8 of the rural

Table No. 4.2.2
Middle Schools having Teaching Aids and Average Working per School in Rural and Urban Areas

	Jammu & Kashmir				Kerala			
	Rural		Urban		Rural		Urban	
Teaching aid	% having	Average w.order	% having	Average w.order	% having	Average w.order	% having	Average w.order
1. Black Board	100.0	6.1	100.0	11.1	96.4	15.2	100.0	12.8
2. Rollup Board	24.3	2.5	44.4	3.0	44.6	2.0	54.5	1.2
3. Charts	68.9	9.5	77.8	16.6	91.1	19.1	86.4	23.0
4. Graphs	0.0	0.0	0.0	0.0	16.1	3.4	50.0	4.1
5 Pictures/ photographs	23.0	4.8	33.3	8.0	48.2	17.6	59.1	10.4
6. Maps	91.9	6.0	88.9	8.4	97.3	10.1	95.4	17.5
7. Globes	86.5	1.0	88.9	1.0	95.5	1.5	95.5	1.8
8. Models	32.4	3.4	77.8	2.1	77.7	7.5	81.8	6.9
9. Specimens	2.7	36.5	0.0	0.0	34.8	13.9	54.5	7.4
10. Radio	25.7	0.8	11.1	1.0	66.1	0.8	81.8	1.4
11. Flash cards	1.4	34.0	0.0	0.0	35.7	34.6	50.0	28.5

Table No 4.2.2 (contd.)
Middle Schools having Teaching Aids and Average Working per school in Rural and Urban Areas

	Orissa				Uttar Pradesh			
	Rural		Urban		Rural		Urban	
Teaching aid	% having	Average w.order	% having	Average w.order	% having	Average w.order	% having	Average w.order
1.Black Board	98.4	3.5	100.0	7.0	84.7	3.2	91.6	4.8
2.Rollup Board	26.1	2.0	30.0	1.7	14.8	2.2	28.4	2.6
3. Charts	62.7	6.2	69.2	8.3	23.5	10.9	61.0	18.8
4. Graphs	9.7	2.6	7.7	3.0	2.2	2.4	9.5	7.7
5. Pictures/ photographs	25.3	4.8	61.5	15.9	7.1	5.7	18.9	11.7
6. Maps	96.1	7.0	100.0	5.9	70.5	6.3	92.6	5.8
7. Globes	83.7	1.0	92.8	1.1	30.6	0.9	56.8	1.1
8. Models	14.0	2.5	23.1	2.7	7.4	15.2	15.8	9.7
9. Specimens	1.9	8.4	0.0	0.0	4.6	15.4	6.3	34.2
10. Radio	16.0	1.1	0.0	0.0	3.0	0.6	8.4	1.1
11. Flash cards	0.0	0.0	0.0	0.0	0.6	7.5	0.0	0.0

schools. Maps were available with 96.1 percent of rural schools whereas all the urban schools had maps in them. The average number per school in rural areas was found to be 7.0 as compared to 5.9 of urban areas. Globes were

available in 92.8 percent of urban schools which was found to be higher than the rural schools (83.7%). The average number per school in rural and urban areas were almost same.

Uttar Pradesh had blackboards in 91.6 percent of urban schools as compared to 84.7 percent of rural schools. The average number per school in urban areas (4.8) was found to be higher than that of rural schools (3.2). The figures regarding charts in terms of urban schools having and average number per school were 61.0 percent and 18.8 which were found to be higher than that of rural schools (23.5 % and 10.9). Maps were available in 92.6 percent of urban schools as compared to 70.5 percent of rural schools. The average number per school was found to be more or less same. Globes were available in 30.6 percent of rural schools and 56.8 percent of urban schools. The average number per school was found to be 0.9 and 1.1 for rural and urban schools respectively.

4.2.2 Teaching aids in Secondary / Higher Secondary Schools:

The teaching aids which were available in more than 50 percent of Secondary /Higher Secondary schools in any of the four states, viz., Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh were found to be blackboards, rollup blackboards, charts, graphs, maps, globes, models, specimens, radios and slides. The percentages of such schools having blackboards in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh were 97.1, 96.9, 98.9 and 99.5 respectively. The average number of workable blackboards per school was the highest (26.0) in the state of Kerala and 7.3, the lowest in the state of Orissa. The state of Jammu & Kashmir reported the highest proportion (36.0%) of blackboards which were not in usable condition. The percentages of schools having rollup blackboards were 31.4, 86.1, 52.2 and 48.4 for the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. THe average number per school was the

highest (3.8) in the state of Uttar Pradesh and the lowest (1.9) in the state of Orissa. Further it was found that the state of Jammu & Kashmir had the highest proportion (32.0%) of rollup blackboards in non working condition. The state of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh had charts in 85.7, 98.5, 93.3 and 89.7 percent of schools respectively. The state of Uttar Pradesh had 50.8 as highest average number of usable charts per school whereas the lowest figure of 20.5 was found in the state of Orissa. The highest proportion (20%) of non usable charts was found to be in the state of Jammu & Kashmir. Graphs were available in 5.7, 69.2 20.0 and 28.2 percent of schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The highest average number of usable graphs was found to be 4.6 in the state of Uttar Pradesh and the lowest corresponding figure was 1.8 for the state of Orissa. The highest number of non usable graphs was found to be about 56.0 percent in the state of Jammu & Kashmir. Maps were available in 91.4, 98.5, 98.9 and 94.6 percent of schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The highest average number of usable maps was found to be 31.7 for the state of Kerala and the lowest figure, i.e.,13.4 was in the state of Jammu & Kashmir. Here again the highest number of non usable maps (25.0%) was found in the state of Jammu & Kashmir. The states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh had globes in 85.7, 95.4, 84.4 and 82.1 percent of schools respectively. The highest average of usable globes was found to be 1.7 in the state of Jammu & Kashmir and the lowest, 1.3 in the state of Orissa. The figures for non usable globes was found to be 26.0 percent, the highest in the state of Kerala. Models were available in 80.0, 93.8, 54.4 and 59.6 percent of schools in Jammu & Kashmir, Kerala, Orissa and the state of Uttar Pradesh respectively. The state of Kerala had

Table No. 4.2.3

Secondary / Higher Secondary Schools having teaching aids, average working per school and proportion in working order

Teaching aids	Jammu & Kashmir % having	 Average w.order	 % working order	Kerala %having	 Average w.order	 % working
1. Black Board	97.1	12.7	64.1	96.9	26.0	93.8
2. Rollup Blackboard	31.4	3.3	67.9	86.1	2.6	71.8
3. Bulletin Board	42.9	2.0	96.8	47.7	4.1	100.0
4. Flannel Board	2.9	1.0	100.0	4.6	1.7	83.3
5 Flannel graphs	0.0	0.0	0.0	10.7	3.4	100.0
6. Charts	85.7	27.8	79.8	98.5	36.9	85.2
7. Graphs	5.7	3.5	43.7	69.2	4.4	86.9
8. Pictures / Photographs	34.3	8.2	79.7	46.1	22.8	93.5
9. Maps	91.4	13.4	75.1	98.5	31.7	78.6
10. Posters	11.4	4.5	100.0	23.1	8.1	58.2
11. Diagrams	20.0	18.9	100.0	47.7	11.1	84.2
12. Cartoons	2.9	1.0	100.0	7.7	4.4	88.0
13. Comic strips	0.0	0.0	0.0	3.1	6.5	100.0
14. Globes	85.7	1.7	81.9	95.4	1.4	73.8
15. Models	80.0	9.7	94.1	93.8	22.5	90.0
16. Specimens	25.7	23.2	100.0	70.8	13.4	88.0
17. Mockups	0.0	0.0	0.0	7.7	6.4	100.0
18. Puppets	2.8	4.0	100.0	3.1	7.5	100.0
19. Radios	74.3	1.0	71.0	81.5	0.9	80.6
20. Tap recorders	5.7	1.0	100.0	41.5	0.9	86.2
21. Cassettes	5.7	3.0	100.0	44.6	7.0	83.5
22. 16mm film projectors	0.0	0.0	0.0	49.2	0.9	87.9
23. Opaque projectors	0.0	0.0	0.0	33.8	0.7	69.6
24. Over head projectors	0.0	0.0	0.0	44.6	1.0	93.5
25. 35mm film-cum-slide projectors	2.9	3.0	100.0	33.8	1.6	94.7
26. Slides	45.7	31.6	90.9	56.9	25.3	93.0
27. Flash cards	0.0	0.0	0.0	10.7	30.4	97.7
28. Films	0.0	0.0	0.0	27.7	6.2	86.8
29. Film strips	0.0	0.0	0.0	40.0	31.2	90.1
30. Televisions	11.4	0.3	25.0	12.3	0.9	87.5
31. Video Cassette players/recorders	0.0	0.0	0.0	1.5	1.0	100.0
32. Video cassettes	0.0	0.0	0.0	0.0	0.0	0.0
33. Micro-computers	2.8	2.0	100.0	6.1	1.7	100.0
34. Floppy Discs	0.0	0.0	0.0	6.1	26.3	98.1

Table No. 4.2.3 (contd.)

Secondary / Higher Secondary Schools having teaching aids, average working per school and proportion in working order

Teaching aids	Orissa			Uttar Pradesh		
	% having	Average w.order	% working order	%having	Average w.order	% working order
1. Black Board	98.9	7.3	96.9	99.5	18.9	94.9
2. Rollup Blackboard	52.2	1.9	89.2	48.4	3.8	89.5
3. Bulletin Board	14.4	1.1	93.7	35.4	2.2	98.8
4. Flannel Board	2.2	1.5	100.0	5.4	3.1	92.5
5 Flannel graphs	1.1	2.0	100.0	4.0	4.0	97.3
6. Charts	93.3	20.5	87.7	89.7	50.8	90.3
7. Graphs	20.0	1.8	100.0	28.2	4.6	98.0
8. Pictures/ Photographs	38.9	6.1	99.1	36.3	22.2	94.2
9. Maps	98.9	18.1	80.6	94.6	19.6	83.3
10. Posters	5.6	11.6	100.0	29.6	12.0	86.9
11. Diagrams	4.4	9.0	100.0	38.6	18.2	92.9
12. Cartoons	1.1	25.0	100.0	3.1	3.7	89.7
13. comic strips	1.1	10.0	100.0	1.8	3.5	56.0
14. Globe	84.4	1.3	87.5	82.1	1.5	79.1
15. Models	54.4	8.7	95.7	59.6	17.8	91.1
16. Specimens	31.1	8.5	100.0	51.1	50.1	91.0
17. Mockups	0.0	0.0	0.0	0.4	1.0	100.0
18. Puppets	4.4	6.2	100.0	2.2	3.4	85.0
19. Radios	42.2	1.0	81.8	54.3	1.0	82.1
20. Tap recorders	13.3	1.1	92.8	29.6	1.1	93.4
21. Cassettes	11.1	8.6	100.0	29.6	9.6	94.6
22. 16mm film projector	3.3	1.0	100.0	6.3	1.0	82.3
23. Opaque projectors	7.8	1.0	100.0	3.6	0.9	87.5
24. Over head projectors	0.0	0.0	0.0	0.0	0.0	0.0
25. 35mm film-cum -slide projectors	2.2	0.5	50.0	2.2	1.0	100.0
26. Slides	10.0	30.0	83.3	22.4	36.8	99.4
27. Flash cards	0.0	0.0	0.0	0.4	50.0	100.0
28. Films	0.0	0.0	0.0	0.0	0.0	0.0
29. Film strips	0.0	0.0	0.0	0.9	15.5	67.4
30. Televisions	5.6	1.0	100.0	20.2	0.9	86.9
31. Video Cassette players/recorders	0.0	0.0	0.0	0.9	1.0	100.0
32. Video cassettes	0.0	0.0	0.0	0.0	0.0	0.0
33. Micro-computers	1.1	2.0	100.0	0.5	1.0	100.0
34. Floppy Discs	1.1	10.0	66.7	0.0	0.0	0.0

the highest average of usable models (22.5) per school and the state of Orissa reported 8.7, the lowest figure. Though the state of Kerala had the highest percentage of schools having models as well as the largest average per school, but this state has also got the largest proportion, i.e., 10.0 percent of models which were not in usable condition. Specimens were available in the state of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh for 25.7, 70.8, 31.1 and 51.1 percent of schools respectively. The highest average usable specimens per school was found to be 50.1 in the state of Uttar Pradesh, whereas the corresponding lowest figure was 8.5 in the state of Orissa. The largest proportion of non usable specimens was found to be 12.0 percent in the state of Kerala. Radios were available in 74.3, 81.5, 42.2 and 54.3 percent of schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. In all the states one radio per school was found to be in working order. The highest number of radios found in non working condition was 29.0 percent in the state of Jammu & Kashmir. The states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh had slides in 45.7, 56.9, 10.0 and 22.4 percent of schools respectively. The average number of slides per school was found to be highest, i.e., 36.8 in the state of Uttar Pradesh and the lowest 25.3 in Kerala. The highest proportion of non usable slides was found to be about 17.0 percent in the state of Orissa.

The other teaching aids possessed by 20 to 50 percent of schools in any of the four states were found to be bulletin boards, pictures / photographs, posters, diagrams, tape recorders, cassettes, 16mm. film projectors, opaque projectors, overhead projectors, 35mm. film- cum- slide projectors, films and film strips. The teaching aids, viz., bulletin boards, pictures/photographs, posters and diagrams were found to be in the highest proportions of schools ranging from 23.1 to 47.7 percent in the

state of Kerala.The state of Uttar Pradesh is placed at the 2nd position where the proportions varied from 29.6 to 38.6 percent. The states of Jammu & Kashmir and Orissa comes to 3rd and 4th position respectively. The modern electronic aids like, tape recorders, cassettes, 16/35 mm projectors, opaque and overhead projectors, films & film strips were found to be possessed by the highest proportion of schools in the state of Kerala alone. The picture of availability of these aids in the remaining three states, viz., Jammu & Kashmir, Orissa and Uttar Pradesh was dismal.

The micro computers were found to be in 6.1 percent of schools (highest) in the state of Kerala whereas the figures for Jammu & Kashmir, Orissa and Uttar Pradesh were found to be 2.8, 1.1 and 0.5 percent respectively.

In order to compare the position of different teaching aids between rural and urban areas in each state it was decided to consider only those aids which were available in 50 percent or more of schools.

In the state of Jammu & Kashmir, blackboards, charts and globes were found in higher proportions (100.0%, 100.0% and 90.0%) of schools in urban areas as compared to (96.0, 80.0, and 84.0 percent) of rural areas. The average number of workable aids per school in respect of each of them was also found to be higher in the urban schools. Maps and radios were available in 92.0 percent and 84.0 percent of rural schools which were comparatively higher than urban schools (90 % and 50 %). 17.9 was the average number of maps per school in the urban areas as compared to 11.7 of rural schools. As regards radio is concerned, the average per rural schools was 1.1 as against 0.8 of urban area schools.

The state of Kerala had charts, maps, globes, models and specimens available in schools ranging from 79.2 percent to 100 percent of urban

schools which were found to be larger than rural schools. The corresponding figures for rural schools varied from 65.9 to 97.6 percent. The average number of these aids per school was found to be higher in the urban areas as compared to the rural areas. 97.6 percent rural schools had blackboards as compared to 95.8 percent of urban schools whereas average per urban school, i.e., 26.7 was found to be higher than that of rural schools (25.7). Rollup blackboards were also found in higher proportion of rural schools (87.8%) as compared to 83.3 percent of urban schools. The average per school of rollup blackboards was found to be more or less the same in rural and urban schools. 58.3 percent of urban schools had bulletin boards which were found to be higher than 45.5 percent of rural schools. It is interesting to note that the average number of bulletin boards per school was found to be 4.5 in rural areas in contrast to 3.5 of urban areas. Graphs were also available in higher proportion of rural schools (70.7%) as compared to 66.7% of urban schools. The position of average number of graphs per school was slightly better in the rural areas as compared to that of urban areas. 48.8 percent of rural schools had pictures/photographs in them whereas this figure for urban schools was 41.7 percent. 30.5 was the average per school of the urban areas which was found to be higher than 19.9 of rural areas. The modern electronic aids like radios, tape recorders, cassettes, 16mm film projectors, opaque projectors, overhead projectors, slides and film stripes were available in larger proportion of urban schools ranging from 50.0 to 87.5 percent as compared to rural schools varying from 24.4 to 78.1 percent. The average number of these aids per school mostly found to be higher in urban areas than the rural areas.

In the state of Orissa teaching aids, viz., blackboards, charts, pictures/photographs, maps, globes, models, specimens and radios were consistently found in higher proportions of urban schools ranging from 50

to 100 percent as compared to that of rural schools ranging from 26.4 to 98.6 percent. Further it was observed that the rollup blackboards were found to be in 52.8 percent of rural schools as compared to 50.0 percent of urban schools. The position of average number of each of these aids per school was found to be consistently higher in urban areas as compared to that of rural areas.

In the state of Uttar Pradesh all the schools in rural areas had blackboards in them as compared to 98.9 percent of urban schools. 20.2 was the average number of black boards per school in urban areas whereas for

Table No.4.2.4

Secondary / Higher Secondary Schools having teaching aids, average working per school in Rural and Urban Areas

Teaching aid	Jammu & Kashmir				Kerala			
	Rural		Urban		Rural		Urban	
	% having	Average w.order	% having	Average w.order	% having	Average w.order	% having	Average w.order
1.Black Board	96.0	11.4	100.0	15.8	97.6	25.7	95.8	26.6
2.Rollup Black-boards	32.0	4.0	30.0	1.3	87.8	2.7	83.3	2.6
3.Bulletin Bds.	40.0	2.3	50.0	1.4	41.5	4.5	58.3	3.5
4.Charts	80.0	22.9	100.0	37.5	97.6	32.1	100.0	44.9
5.Graphs	8.0	3.5	0.0	0.0	70.7	4.5	66.7	4.3
6.Pictures/ photographs	32.0	8.8	40.0	7.0	48.8	19.9	41.7	30.5
7.Maps	92.0	11.7	90.0	17.9	97.6	27.4	100.0	38.8
8.Globes	84.0	1.7	90.0	1.7	95.1	1.4	95.8	1.6
9.Models	80.0	10.7	80.0	7.5	90.2	21.3	100.0	24.3
10.Specimens	20.0	24.2	40.0	22.0	65.9	7.8	79.2	21.4
11.Radios	84.0	1.1	50.0	0.8	78.1	1.0	87.5	0.9
12.Tape recorders	8.0	3.0	0.0	0.0	29.3	1.0	62.5	0.9
13.Cassettes	8.0	3.0	0.0	0.0	36.6	5.3	58.3	8.8
14.16mm Film Projectors	0.0	0.0	0.0	0.0	36.6	0.9	70.8	0.9
15.Opaque Projectors	0.0	0.0	0.0	0.0	24.4	0.7	50.0	0.8
16.Over Head/ Projectors	0.0	0.0	0.0	0.0	36.6	1.1	58.3	0.8
17.Slides	40.0	19.0	60.0	52.0	48.8	26.2	70.8	24.4
18.Film Strips	0.0	0.0	0.0	0.0	31.7	33.6	54.2	28.8

Table No.4.2.4 (contd.)

Secondary / Higher Secondary Schools having teaching aids, average working per school in Rural and Urban Areas

	Orissa				Uttar Pradesh			
	Rural		Urban		Rural		Urban	
Teaching aid	% having	Average w.order	% having	Average w.order	% having	Average w.order	% having	Average w.order
1.Blackboards	98.6	6.2	100.0	11.7	100.0	17.9	98.9	20.2
2.Rollup Black-boards	52.8	1.7	50.0	2.9	49.6	4.5	46.9	2.9
3.Bulletin Bds.	11.1	0.9	27.8	1.6	30.7	1.6	41.7	2.8
4.Charts	93.1	16.9	94.4	34.9	89.0	54.5	90.6	45.9
5.Graphs	13.9	1.4	44.4	2.3	31.5	4.0	24.0	5.6
6.Pictures/ photographs	33.3	5.7	61.1	6.9	29.9	20.9	44.8	23.4
7.Maps	98.6	14.7	100.0	31.2	94.5	22.0	94.8	16.3
8.Globes	84.7	1.2	83.3	1.7	84.3	1.5	79.2	1.4
9.Models	45.8	6.7	88.9	12.6	53.5	18.0	67.7	17.7
10.Specimens	26.4	5.9	50.0	13.8	44.1	43.4	60.4	57.1
11.Radios	40.3	1.0	50.0	0.7	48.8	1.1	61.5	0.9
12.Tape recorders	11.1	1.0	22.2	1.3	27.6	0.9	32.3	1.2
13.Cassettes	9.7	6.9	16.7	12.7	28.4	10.7	31.3	8.4
14.16mm Film Projectors	2.8	1.0	5.6	1.0	3.9	1.6	9.4	0.7
15.Opaque Projectors	6.9	1.0	11.1	1.0	0.8	1.0	7.3	0.9
16.Over Head Projectors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17.Slides	8.3	24.3	16.7	41.3	22.1	41.6	22.9	30.8
18.Film Strips	0.0	0.0	0.0	0.0	0.0	0.0	2.1	15.5

rural schools the figure was 17.9. Charts were available in 90.6 percent of urban schools which was found to be slightly higher than that of rural schools (89.0 %). The average number per school was found to be 45.9 of urban areas as compared to 54.5 of rural areas. Maps were available more or less in equal proportions (95.0 %) in both, rural and urban areas. However the average number per school, i.e., 22.0 was found to be higher in rural school than the 16.3 for urban areas. Globes were available in 84.3 percent of rural schools as compared to 79.2 percent of urban schools. The average per schools was found more or less equal in rural and urban areas.

The proportion of schools having models, 67.7 percent in urban areas was found to be higher than rural schools (53.5 %). The average number of models per school was found to be almost equal. 60.4 percent of urban schools had specimens and the average per school was found to be 57.1. The corresponding figures for rural areas were 44.1 percent and 43.4 per school. Radios were available in higher proportions (61.5%) of urban schools as compared to 48.8 percent of rural schools. More or less one radio per school was available in both rural and urban areas.

4.3 Teaching aids used in teaching of different subjects:

From each responding institution the information regarding number of teaching aids and their use in teaching of different subjects was collected. The results of the same are presented for middle stage and secondary stage separately. Under each stage, each subject namely physical sciences, biological sciences, mathematics, social studies, language, music, fine arts and home science is separately discussed.

4.3.1 The use of teaching aids at middle stage:

All the schools having middle stage in them were treated as the responding institutions for this purpose. There were in all 1288 institutions, out of which 948 were middle schools and 340 were secondary/higher secondary schools. In this category of schools the statewise figures were 118, 187, 299 and 684 for Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively.

(i) Teaching of Physical Sciences:

In order to identify the predominant aids, an arbitrary criterion was developed. An aid which was available in 10 percent or more of schools and out of these schools at least 50 percent were using it in teaching of

physical sciences was considered relevant for the purpose. According to this criteria, it was found that charts, pictures/photographs, maps and models were used in any of the states viz., Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh.

In the state of Jummu & Kashmir, only one aid i.e., charts was available in 11.0 percent of schools and it was used by all of these schools in teaching of the subject. Charts, Picture/Photographs, Maps and Models were used in the state of Kerala. The respective proportions of schools having them 42.8, 19.8, 11.7 and 25.7 and their corresponding usage percentages were 98.7, 59.2, 87.8 and 91.7. Charts were used by 96.3

Table No. 4.3.1
Availability and Use of Teaching Aids in Teaching of Physical Sciences at Middle stage

Teaching aid	Jammu & Kashmir No. of schools having	Average per school	% of schools using	Kerala No. of schools having	Average per school	% of schools using
1.Charts	13	4.0	100.0	80	6.5	98.7
2.Graphs	0	0.0	0.0	2	4.5	100.0
3.Pictures/ Photographs	3	3.0	100.0	37	8.9	59.2
4.Maps	0	0.0	0.0	22	4.5	87.8
5.Posters	1	3.0	0.0	3	7.3	66.7
6.Diagrams	0	0.0	0.0	18	5.6	100.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	1	10.0	0.0	2	2.5	100.0
10.Models	10	3.1	90.0	48	6.1	91.7
11.Specimens	1	8.0	100.0	16	8.1	31.2
12.Mockups	0	0.0	0.0	1	5.0	100.0
13.Puppets	0	0.0	0.0	4	10.0	100.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	5	3.2	60.0
16.Flash cards	0	0.0	0.0	12	14.7	60.7
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	3	7.7	100.0
19.Video cassettes	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.1 (contd.)
Availability and Use of Teaching Aids in Teaching of Physical Sciences at Middle stage

	Orissa			Uttar Pradesh		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	54	3.6	96.3	68	6.1	95.6
2.Graphs	1	3.0	0.0	1	10.0	100.0
3.Pictures/ Photographs	1	80.0	0.0	9	3.8	88.9
4.Maps	1	2.0	100.0	7	5.4	85.7
5.Posters	0	0.0	0.0	8	3.5	100.0
6.Diagrams	0	0.0	0.0	9	4.1	100.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	9	4.1	77.8	3	13.3	0.0
10.Models	5	1.0	80.0	13	20.4	100.0
11.Specimens	0	0.0	0.0	9	14.9	66.7
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	0	0.0	0.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	1	5.0	100.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video cassettes	0	0.0	0.0	0	0.0	0.0

percent of the total number (18.1%) of schools in the state of Orissa. A similar picture was also found in the state of Uttar Pradesh. In this state 95.6 percent of schools were using charts in teaching of physical sciences which was available in 10 percent of total number of schools.

(ii) Teaching of Biological Sciences:

The teaching aids which were commonly used on the basis of the above mentioned criteria, in teaching of biological sciences in any of the four states were charts, pictures/photographs, maps, diagrams, models and specimens.

In the state of Jammu & Kashmir only two aids i.e., charts and models

were used for teaching biological sciences. Charts were used by 76.7 percent out of 30 (25.4%) schools who were possessing them. The corresponding figures for usage of models were 76.5 from 14.4 percent of schools having models. In the state of Kerala the usage percentages were charts - 94.9 percent, pictures/photographs - 90 percent%, maps - 30 percent, diagrams - 98.5 percent, models - 90.8 percent, specimens - 85.4 percent. The corresponding percentages of schools possessing these aids were charts - 51.9 percent, pictures/photographs - 21.4 percent, maps -

Table No. 4.3.2
Availability and Use of Teaching Aids in Teaching of Biological sciences at Middle stage

	Jammu & Kashmir			Kerala		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	30	4.4	76.7	97	12.5	94.9
2.Graphs	0	0.0	0.0	4	8.8	100.0
3.Pictures/ Photographs	8	4.3	87.5	40	8.2	90.0
4.Maps	0	0.0	0.0	20	7.4	30.0
5.Posters	3	0.3	66.7	5	6.6	80.0
6.Diagrams	1	2.0	100.0	19	6.0	98.5
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	1	2.0	100.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	17	3.5	76.5	76	5.1	90.8
11.Specimens	1	18.0	100.0	41	9.7	85.4
12.Mockups	0	0.0	0.0	4	4.3	75.0
13.Puppets	0	0.0	0.0	1	4.0	100.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	9	5.7	88.9
16.Flash cards	0	0.0	0.0	11	17.6	53.7
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	2	4.5	100.0
19.Video cassette	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.2 (contd.)
Availability and Use of Teaching Aids in Teaching of Biological Sciences at Middle stage

	Orissa			Uttar Pradesh		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	144	7.2	95.1	55	9.9	98.2
2.Graphs	1	2.0	100.0	2	4.5	100.0
3.Pictures/ Photographs	2	50.5	100.0	7	4.0	100.0
4.Maps	2	4.5	50.0	8	3.6	100.0
5.Posters	0	0.0	0.0	6	4.3	100.0
6.Diagrams	0	0.0	0.0	9	4.1	100.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	19	30.1	89.5	20	4.8	95.0
11.Specimens	4	9.5	100.0	17	8.7	82.4
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	0	0.0	0.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	6	10.7	83.3
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	1	10.0	100.0
19.Video cassettes	0	0.0	0.0	0	0.0	0.0

10.7 percent, diagrams – 10.2 percent, models – 40.6 percent, specimens – 21.9 percent. Like the state of Jammu & Kashmir, in the state of Orissa only one aid i.e., charts was used by 95.1 percent of schools out of a total of 48.2 percent who had this aid with them. On the basis of above criteria not a single aid was found to be in use in Uttar Pradesh. However charts were found to be possessed by only 8.0 percent of schools and the same were utilised in teaching of biological sciences by 98.2 percent of them.

From the results presented above, it may be observed that the largest number of teaching aids were not only available but also used maximally in

the state of Kerala.

(iii) Teaching of Mathematics:

In teaching of mathematics, the common teaching aids, which were largely used in any of the four states, were found to be charts, graphs, models and flash cards. Charts were used by 90.4 percent out of the 17.8 percent of schools having charts in Jammu & Kashmir. In this state no other aid except charts was used in teaching of mathematics as a subject.

Table No. 4.3.3
Availability and Use of Teaching Aids in Teaching of Mathematics at Middle stage

	Jammu & Kashmir			Kerala		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	21	4.6	90.4	66	7.7	90.9
2.Graphs	0	0.0	0.0	29	4.6	93.1
3.Pictures/ photographs	0	0.0	0.0	16	10.6	23.7
4.Maps	1	20.0	0.0	5	8.6	40.0
5.Posters	0	0.0	0.0	6	10.2	83.3
6.Diagrams	0	0.0	0.0	16	5.5	100.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strip	0	0.0	0.0	0	0.0	0.0
9.Globes	1	20.0	0.0	2	1.5	0.0
10.Models	0	0.0	0.0	36	5.1	36.1
11.Specimens	0	0.0	0.0	7	6.9	71.4
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	1	2.0	100.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	0	0.0	0.0
16.Flashcards	0	0.0	0.0	49	18.9	83.7
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video cassette	0	0.0	0.0	1	10.0	0.0

Table No. 4.3.3 (contd.)
Availability and Use of Teaching Aids in Teaching of Mathematics at Middle stage

	Orissa			Uttar Pradesh		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	1	1.0	100.0	21	7.5	85.7
2.Graphs	1	1.0	100.0	11	3.6	90.9
3.Pictures/	0	0.0	0.0	1	1.0	100.0
Photographs	0	0.0	0.0	4	5.3	75.0
4.Maps	0	0.0	0.0	3	1.7	100.0
5.Posters	0	0.0	0.0	7	8.0	85.7
6.Diagrams	0	0.0	0.0	0	0.0	0.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	2	1.0	0.0
9.Globes	13	1.5	100.0	2	6.0	50.0
10.Models	0	0.0	0.0	3	9.0	66.7
11.Specimens	0	0.0	0.0	0	0.0	0.0
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	0	0.0	0.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	0	0.0	0.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video cassettes	0	0.0	0.0	0	0.0	0.0

The state of Kerala among all other states used largest number of teaching aids, i.e., charts, graphs, models and flash cards. Charts were available in 35.3 percent of schools out of which 90.9 percent were using.Graphs were used by 93.1 percent out of 15.5 percent of schools possessingthis aid. Models were available in 19.3 percent of schools out of which only 36.1 percent were using them. 83.7 percent schools were using flash cards out of 26.2 percent of schools where this aid was available. In the states of Orissa and uttar Pradesh not a single aid according to the criteria, was found to be used for teaching of mathematics at the middle stage.

Needless to mention that among the four states, in the state of

Kerala, the number of aids used in teaching of mathematics were largest. These aids were charts, graphs, models and flash cards.

(iv) **Teaching of Social Studies:**

The teaching aids available in schools and their use in teaching of social studies at the middle stage, among all the four states, were found to be charts, pictures/photographs, maps and globes as per the criteria.

Table No. 4.3.4
Availability and Use of Teaching Aids in teaching of Social Studies at Middle stage

	Jammu & Kashmir			Kerala		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	25	5.8	92.0	66	8.2	55.5
2.Graphs	0	0.0	0.0	9	4.7	100.0
3.Pictures/ photographs	12	3.7	91.7	48	8.9	87.5
4.Maps	66	6.5	98.5	123	11.5	53.5
5.Posters	1	7.0	100.0	5	8.0	30.0
6.Diagrams	0	0.0	0.0	9	2.7	77.8
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strip	0	0.0	0.0	1	2.0	100.0
9.Globes	53	1.7	90.6	111	1.8	100.0
10.Models	2	5.5	50.0	21	3.6	90.5
11.Specimens	1	9.0	100.0	8	8.5	75.0
12.Mockups	0	0.0	0.0	1	2.0	100.0
13.Puppets	0	0.0	0.0	2	3.0	100.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	2	1.5	100.0
16.Flashcards	0	0.0	0.0	13	16.3	76.9
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	3	5.3	100.0
19.Video cassette	0	0.0	0.0	1	10.0	0.0

Table No. 4.3.4 (contd.)

Availability and Use of Teaching Aids in Teaching of Social Studies at Middle Stage

Teaching aid	Orissa No. of schools having	Average per school	% of schools using	Uttar Pradesh No. of schools having	Average per school	% of schools using
1.Charts	28	3.8	96.4	85	8.1	100.0
2.Graphs	24	2.7	83.0	4	5.0	100.0
3.Pictures/ Photographs	40	4.4	100.0	26	8.8	100.0
4.Maps	243	7.3	97.5	318	6.3	95.3
5.Posters	23	5.0	100.0	16	5.8	87.5
6.Diagrams	3	7.3	66.7	5	2.8	100.0
7.Cartoons	0	0.0	0.0	1	1.0	100.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	199	1.1	95.9	133	1.2	94.0
10.Models	6	1.7	100.0	7	13.1	100.0
11.Specimens	1	4.0	0.0	2	11.0	100.0
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	1	2.0	100.0	1	5.0	100.0
14.Cassettes	0	0.0	0.0	3	2.7	100.0
15.Slides	0	0.0	0.0	0	0.0	0.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	1	10.0	100.0
19.Video cassettes	0	0.0	0.0	0	0.0	0.0

In the state of Jammu & Kashmir charts were available in 21.2 percent of schools. Out of these schools 92 percent were using this aid in teaching of social studies. 10.2 percent of schools had pictures/photographs, of which 91.7 percent were using this aid. Maps were available in 55.9 percent of schools and 98.5 percent of them were using it. 44.9 percent of schools had globes with them which were used by 90.6 percent of schools. In the state of Kerala charts were available in 35.3 percent of schools, out of these schools only 55.5 percent were using charts in teaching of social studies. 25.9 percent of schools had pictures/photographs in them and 87.5 percent were using in teaching. Maps were available in 65.8 percent of schools, out of which 53.5 percent schools were using it. 59.4 percent of

schools had globes in them and all were using them in teaching of social studies. In the state of Orissa, only three aids, viz., pictures / photographs, maps and globes were being used in teaching of social studies. Pictures / photographs were used by all the 13.4 percent of schoolswhere this aid was available. 81.3 percent of schools having maps in them, 97.5 percent were using in the process of teaching. Globes were available in 66.6 percent of schools and the same were used in teaching of social studies by their 95.9 percent. The aids, generally, used in the state of Uttar Pradesh were found to be charts, maps and globes. All the schools (12.4%) having charts were using the same for teaching of social studies. Maps were used by 95.3 percent out of 46.5 percent of schools who had this facility. 19.4 percent of schools having globes in them, their 94.0 percent were using the same in teaching of this subject.

From the above result it may be observed that only two aids, viz., maps and globes were used, in all the four states,in teaching of social studies.The other aids, viz., charts, pictures/photographs were not used by all the four states. Charts were used in the states of Jammu & Kashmir, Kerala and Uttar Pradesh and pictures/ photographs were used in the state of Jammu & Kashmir, Kerala and Orissa.

(v) Teaching of Language:

In teaching of language as a subject, the results indicate that the aids used as per the criteria were very few. In all the four states only two aids, viz., charts and flash cards were found to be used by the schools in teaching of language.

In the state of Jammu & Kashmir 35.6 percent of schools had charts only in them. Out of these, 92.9 percent were using them in the process of teaching languages. In Kerala state charts were available in 36.9 percent

of schools, 72.8 percent of them were using the same in teaching of language. Another aid i.e., flash cards was used by 35 percent of schools which was available in 32.1 percent of the total. In the state of Orissa not a single aid was identified which could fall within the criteria. In the state of Uttar Pradesh the position was also similar to that of Orissa.

Table No. 4.3.5
Availability and Use of Teaching Aids in Teaching of Language at Middle stage

Teaching aid	Jammu & Kashmir No. of schools having	Average per school	% of schools using	Kerala No. of schools having	Average per school	% of schools using
1.Charts	42	6.6	92.9	69	10.4	72.8
2.Graphs	0	0.0	0.0	2	3.0	100.0
3.Pictures/ photographs	6	3.8	100.0	14	11.0	90.0
4.Maps	0	0.0	0.0	3	6.0	66.7
5.Posters	2	6.0	100.0	7	6.9	100.0
6.Diagrams	0	0.0	0.0	3	3.0	66.7
7.Cartoons	1	15.0	100.0	1	3.0	100.0
8.Comic strip	0	0.0	0.0	2	5.5	100.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	0	0.0	0.0	7	6.9	65.7
11.Specimens	2	4.0	100.0	3	10.3	66.7
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	1	5.0	100.0
14.Cassettes	0	0.0	0.0	1	5.0	100.0
15.Slides	0	0.0	0.0	1	5.0	0.0
16.Flashcards	1	34.0	100.0	60	25.3	35.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	3	4.7	100.0
19.Video cassettes	0	0.0	0.0	1	10.0	10.0

Table No. 4.3.5 (Contd.)
Availability and Use of Teaching Aids in Teaching of Language at Middle stage

	Orissa			Uttar Pradesh		
Teaching aid	No. of schools having	Average per school	% of schools using	No. of schools having	Average per school	% of schools using
1.Charts	6	3.2	100.0	42	5.5	95.2
2.Graphs	0	0.0	0.0	4	7.7	75.0
3.Pictures/ Photographs	3	4.2	96.9	11	4.9	90.9
4.Maps	2	1.0	100.0	6	10.3	83.3
5.Posters	2	15.5	100.0	7	8.9	85.7
6.Diagrams	0	0.0	0.0	4	9.5	100.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	1	4.0	100.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	2	1.0	100.0	1	25.0	100.0
11.Specimens	0	0.0	0.0	5	18.8	60.0
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	2	1.5	100.0	1	4.0	100.0
14.Cassettes	0	0.0	0.0	7	3.9	71.4
15.Slides	0	0.0	0.0	0	0.0	0.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video cassettes	0	0.0	0.0	0	0.0	0.0

(vi) Teaching of music:

In teaching of music as a subject at the middle stage, it was found that among all the four states not a single aid satisfied the criteria suggested earlier . Perhaps there may be very few schools who were offering this subject as a part of curriculum. The maximum number of schools that were using cassettes in teaching of music were found to be only six in the state of Uttar Pradesh.

(vii) Teaching of fine arts:

In teaching of fine arts not a single aid was found to qualify the criteria in all the four states. It may be due to the fact that very few

schools may be offering this subject. The highest number of schools i.e., ten were found to be using charts in teaching of this subject in the state of Uttar Pradesh. Another aid, i.e., pictures/photographs was also used by only eight schools in the same state.

(viii) Teaching of Home Science:

In teaching of home science at the middle stage, the number of schools using any of the aids was found to be very small. It may be due to the fact that very few schools may be offering this subject to the students, Only 21 schools in Uttar Pradesh, nine schools in Kerala, three schools in Jammu & Kashmir and two in Orissa were found to be using charts in teaching of home science. The other aids, like, pictures/photographs, posters and models were also found to be used by few schools ranging from two to five in number.

4.3.2 The Use of Teaching aids at the Secondary Stage:

The Secondary stage is, generally, the part of Secondary Schools and Higher Secondary Schools. All such schools, who responded in this study, were considered for this purpose. There were in all 413 such schools, out of which 35 were in Jammu & Kashmir, 65 in Kerala, 90 in Orissa and 223 in the state of Uttar Pradesh.

Based on this criteria the different types of teaching aids available and their utilisation in teaching of various subjects, viz., physical sciences, biological sciences, mathematics, social studies, languages, music, fine arts and home science at the secondary stage are separately presented as under. An arbitrary criteria that an aid which was available in 10 percent or more of schools and at least 50 percent of them were using the same in teaching of a particular subject was considered.

(i) Teaching of Physical Sciences:

The prominent teaching aids used in teaching of physical sciences at the secondary stage, in any of the four states, viz., Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh were charts, pictures/photographs, maps, posters, diagrams, models, specimens, slides, films and film stripes.

In the state of Jammu & Kashmir only three aids, viz., charts, models and slides were used in teaching of physical sciences at the secondary stage. Charts were available in 34.3 percent of schools and all of these schools were using it in teaching. Models were also being used by all the schools which were available in 22.8 percent of schools. 25.7 percent of

Table No. 4.3.6
Availability and Use of Teaching Aids in Teaching of Physical Sciences At Secondary Stage

Teaching aids	Jammu & Kashmir No. of schools having	 Average	 % of schools using	Kerala No. of schools having	 Average	 % of schools using
1.Charts	12	8.6	100.0	56	10.1	92.8
2.Graphs	0	0.0	0.0	5	6.2	100.0
3.Pictures/ photographs	2	10.0	100.0	21	7.2	85.7
4.Maps	1	20.0	0.0	12	6.8	91.7
5.Posters	0	0.0	0.0	9	5.7	77.8
6.Diagrams	5	13.0	30.0	25	7.1	96.0
7.Cartoons	1	1.0	100.0	2	17.0	50.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	0	0.0	0.0	1	1.0	0.0
10.Models	8	9.0	100.0	34	16.6	97.1
11.Specimens	2	5.0	100.0	10	9.5	70.0
12.Mockups	0	0.0	0.0	1	2.0	100.0
13.Puppets	1	4.0	100.0	1	9.0	0.0
14.Cassettes	0	0.0	0.0	2	5.0	50.0
15.Slides	9	15.9	55.6	22	17.6	86.4
16.Flash cards	0	0.0	0.0	1	1.0	100.0
17.Films	0	0.0	0.0	9	4.1	100.0
18.Film stripes	0	0.0	0.0	23	15.1	86.9
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.6 (contd.)
Availability and Use of Teaching Aids in Teaching of Physical Sciences At Secondary Stage.

Teaching aids	Orissa No. of schools having	Orissa Average	Orissa % of schools using	Uttar Pradesh No. of schools having	Uttar Pradesh Average	Uttar Pradesh % of schools using
1.Charts	51	7.5	96.1	125	14.0	96.8
2.Graphs	0	0.0	0.0	7	5.9	85.7
3.Pictures/ photographs	1	10.0	100.0	36	13.9	94.4
4.Maps	2	16.0	0.0	40	7.0	90.0
5.Posters	2	6.0	0.0	18	8.6	89.0
6.Diagrams	1	5.0	0.0	42	9.9	100.0
7.Cartoons	0	0.0	0.0	1	5.0	100.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	5	1.0	80.0	6	2.7	66.7
10.Models	19	4.2	100.0	44	7.6	95.4
11.Specimens	3	16.7	100.0	16	15.7	81.2
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	1	2.0	100.0	1	8.0	0.0
14.Cassettes	0	0.0	0.0	1	2.0	0.0
15.Slides	4	27.2	100.0	2	10.0	100.0
16.Flash cards	0	0.0	0.0	1	10.0	0.0
17.Films	0	0.0	0.0	1	1.0	0.0
18.Film stripes	0	0.0	0.0	0	0.0	0.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

schools had slides in them out of which 55.6 percent were using in teaching of physical sciences.

The state of Kerala had charts - 86.1 percent, pictures/photographs - 32.3 percent, maps -18.5 percent, posters -13.8 percent, diagrams -38.5 percent, models -52.3 percent, specimens - 15.4 percent, slide -33.8 percent, films -13.8 percent and film strips - 35.4 percent of schools. Chart, maps, diagrams, models and films were being used by more than 90 percent of these schools. The remaining aids, viz., pictures/photograph, posters, specimens, slides and film strips were used by the schools ranging from 70 to 90 percent.

In the state of Orissa only two aids, viz., charts and models were

identified. Charts were available in 56.7 percent of schools and 96.1 percent, of them used it in teaching of physical sciences. Models were available in 21.1 percent of schools and all these schools were using them.

The teaching aids, in the state of Uttar Pradesh were found to be charts, pictures/photographs, maps, diagrams and models. The corresponding percentages of schools having these aids were 56.0, 16.1, 17.9, 18.8 and 19.7 respectively. The percentage of schools using these aids in teaching of physical sciences were found to be more than 90 percent through out.

(ii) Teaching of Biological Sciences:

The prominent teaching aids, according to the criteria in the states

Table No. 4.3.7
Availability and Use of Teaching Aids in Teaching of Biological Sciences at Secondary Stage

	Jammu & Kashmir			Kerala		
Teaching aids	No. of schools having	Average	% of schools using	No. of schools having	Average	% of schools using
1.Charts	21	14.9	70.5	62	26.0	96.8
2.Graphs	0	0.0	0.0	4	5.7	75.0
3.Pictures/ photographs	3	7.3	100.0	17	13.6	94.1
4.Maps	0	0.0	0.0	14	10.4	85.7
5.Posters	0	0.0	0.0	8	9.6	87.5
6.Diagrams	3	18.0	100.0	25	10.0	88.0
7.Cartoons	0	0.0	0.0	4	16.3	50.0
8.Comic strips	0	0.0	0.0	1	1.0	100.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	22	8.2	90.9	55	14.8	96.4
11.Specimens	7	24.7	100.0	53	14.7	92.4
12.Mockups	0	0.0	0.0	3	2.3	100.0
13.Puppets	0	0.0	0.0	0	0.0	0.0
14.Cassettes	0	0.0	0.0	1	1.0	100.0
15.Slides	9	39.3	88.9	31	19.8	90.3
16.Flash cards	0	0.0	0.0	1	2.0	100.0
17.Films	0	0.0	0.0	14	3.5	100.0
18.Film stripes	0	0.0	0.0	19	24.1	94.7
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.7 (contd.)
Availability and Use of Teaching Aids in Teaching of Biological Sciences At Secondary Stage

Teaching aids	Orissa			Uttar Pradesh		
	No. of schools having	Average	% of schools using	No. of schools having	Average	% of schools using
1.Charts	77	13.9	98.7	145	40.3	97.9
2.Graphs	0	0.0	0.0	7	2.0	85.7
3.Pictures/ photographs	0	0.0	0.0	35	11.9	94.3
4.Maps	4	9.5	50.0	22	8.5	100.0
5.Posters	4	5.5	100.0	22	15.7	77.3
6.Diagrams	4	6.5	100.0	58	14.0	93.1
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	43	7.2	95.3	100	13.3	97.0
11.Specimens	28	7.2	96.4	110	48.2	95.4
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	2	44.0	50.0
14.Cassettes	0	0.0	0.0	3	19.0	33.3
15.Slides	8	16.7	100.0	46	33.2	91.3
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film stripes	0	0.0	0.0	1	6.0	100.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh were found to be charts, pictures/photographs, maps, posters, diagrams, models, specimens, slides, films and film stripes.

In the state of Jammu and Kashmir charts, models and specimens were available in 60 percent, 62.8 percent and 20 percent of schools respectively. The corresponding proportions of these schools who were using them in teaching were 70.5, 90.9 and 100 percent.

The teaching aids available in the state of Kerala were charts, pictures/photographs, maps, posters, cartoons, models, specimens, slides, films and filmstrips. The percentages of schools having these aids were 95.4, 26.2, 21.5, 12.3, 38.5, 84.6, 81.5, 47.7, 21.5 and 29.2 respectively.

The respective proportion of usage of each of these aids was found to be more than 85 percent.

The state of Orissa had only three teaching aids, viz., charts - 85.5, percent, models - 47.8 percent and specimens - 31.1 percent of schools. The corresponding percentages of schools using these aids in teaching of biological sciences were found to be 98.7, 95.3 and 96.4 respectively.

In the state of Uttar Pradesh the prominent teaching aids used in teaching of biological sciences were found to be charts, pictures / photographs, diagrams, models, specimens and slides. They were available in 65.0 percent, 15.7 percent, 26.0 percent, 44.8 percent, 49.3 percent and 20.6 percent of schools respectively. The same were used by more than 90 percent of schools.

(iii) Teaching of Mathematics:

In teaching of mathematics as a subject at the secondary stage, the teaching aids generally used were found to be charts, graphs, models and slides in all the four states, viz., Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh.

In the state of Jammu & Kashmir only one teaching aid i.e., charts was used by all the schools which was possessed by 34.3 percent of schools.

The teaching aids, in the state of Kerala were found to be charts, graphs, diagrams, models and slides. The corresponding percentages of schools,having these aids were 43.1, 63.1, 16.9, 53.8 and 10.7 respectively. Graphs and models were used by more than 90 percent of schools whereas the proportion of schools using charts, diagrams and slides varied from 70 to 90 percent.

In the state of Orissa graphs were the only aid used in teaching of mathematics. They were available in 15.6 percent of schools of which 92.8

percent were using.

Charts and graphs were found to be the only two aids used in teaching of mathematics in the state of Uttar Pradesh. Charts were available in 15.2 percent of schools and their usage proportion was 91.1 percent. 20.6 percent of schools had graphs with them, out of which 93.5 percent were using the same in teaching of mathematics.

Table No. 4.3.8
Availability and Use of Teaching Aids in Teaching of Mathematics At Secondary Stage

Teaching aids	Jammu & Kashmir			Kerala		
	No. of schools having	Average	% of schools using	No. of schools having	Average	% of schools using
1.Charts	12	6.0	100.0	28	12.5	89.3
2.Graphs	1	6.0	100.0	41	3.7	92.7
3.Pictures/ photographs	0	0.0	0.0	6	20.5	83.3
4.Maps	1	7.0	0.0	5	5.8	60.0
5.Posters	2	5.5	100.0	4	15.0	75.0
6.Diagrams	1	10.0	0.0	11	5.7	81.8
7.Cartoons	0	0.0	0.0	1	10.0	100.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	0	0.0	0.0	0	0.0	0.0
10.Models	0	0.0	0.0	35	12.5	97.1
11.Specimens	1	8.0	100.0	3	7.0	100.0
12.Mockups	0	0.0	0.0	3	9.0	66.7
13.Puppets	0	0.0	0.0	0	0.0	0.0
14.Cassettes	0	0.0	0.0	1	10.0	100.0
15.Slides	0	0.0	0.0	7	23.7	71.4
16.Flash cards	0	0.0	0.0	2	22.5	100.0
17.Films	0	0.0	0.0	3	3.3	66.7
18.Film strips	0	0.0	0.0	6	12.3	100.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.8 (contd.)
Availability and Use of Teaching Aids in Teaching of Mathematics At Secondary Stage

Teaching aids	Orissa			Uttar Pradesh		
	No. of schools having	Average	% of schools using	No. of schools having	Average	% of schools using
1.Charts	1	1.0	100.0	34	5.9	91.1
2.Graphs	14	1.0	92.8	46	3.5	93.5
3.Pictures/ photographs	0	0.0	0.0	11	6.9	54.5
4.Maps	0	0.0	0.0	7	3.4	42.8
5.Posters	0	0.0	0.0	4	3.5	76.0
6.Diagrams	0	0.0	0.0	12	7.0	91.7
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	1	1.0	100.0	1	1.0	100.0
10.Models	0	0.0	0.0	9	8.0	88.9
11.Specimens	0	0.0	0.0	2	11.5	100.0
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	1	65.0	0.0
14.Cassettes	0	0.0	0.0	0	0.0	0.0
15.Slides	0	0.0	0.0	0	0.0	0.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	1	10.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

(iv) Teaching of Social Studies:

The prominent teaching aids found to be used in teaching of social studies were, charts, graphs, pictures/photographs, maps, posters, globes, models, slides and filmstrips.

In the state of Jammu & Kashmir only four teaching aids i.e., charts, pictures/photographs, maps and globes were found to be the prominent ones. They were available in 31.4, 20.0, 85.7 and 71.4 percent of schools respectively. With respect to each of these aids, the corresponding usage percentage was found to be more than 90 percent.

Kerala state had the largest number of teaching aids used in teaching of social studies. They were charts, graphs, pictures/photographs, maps

posters, diagrams, globes, models, slides and filmstrips. It is interesting to note that maps and globes were available in more than 95 percent of schools and their usage percentage was also found to be more than 95 12 to 52 percent of schools and their usage was found to be more than 65 percent.

In the state of Orissa only four aids, viz.,charts, pictures / photographs, maps and globes were found to be used in teaching of social studies. Maps and globes were available in 96.6 and 78.9 percent of schools. In both the cases more than 95 percent of these schools were using them while teaching. On the other hand charts and pictures/photographs were available in 27.8 and 24.4 percent of schools and the same were used by more than 90 percent of these schools.

Table No. 4.3.9
Availability and Use of Teaching Aids in Teaching of Social Studies at Secondary Stage

	Jammu & Kashmir			Kerala		
Teaching aids	No. of schools having	Average	% of schools using	No. of schools having	Average	% of schools using
1.Charts	11	17.2	90.9	34	18.4	94.1
2.Graphs	0	0.0	0.0	8	4.1	75.0
3.Pictures/ photographs	7	5.3	100.0	22	11.7	90.9
4.Maps	30	10.4	96.7	63	31.5	95.2
5.Posters	1	1.0	100.0	9	6.0	66.7
6.Diagrams	1	2.0	0.0	10	4.0	100.0
7.Cartoons	0	0.0	0.0	3	12.0	66.7
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	25	2.0	92.0	62	1.7	96.8
10.Models	1	20.0	100.0	14	5.9	85.7
11.Specimens	1	10.0	100.0	5	11.0	80.0
12.Mockups	0	0.0	0.0	2	6.5	100.0
13.Puppets	0	0.0	0.0	1	2.0	100.0
14.Cassettes	0	0.0	0.0	2	3.5	100.0
15.Slides	0	0.0	0.0	10	25.2	70.0
16.Flash cards	0	0.0	0.0	1	18.0	0.0
17.Films	0	0.0	0.0	3	4.0	100.0
18.Film strips	0	0.0	0.0	9	5.1	100.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.9 (contd.)
Availability and Use of Teaching Aids in Teaching of Social Studies at Secondary Stage

Teaching aids	Orissa			Uttar Pradesh		
	No. of schools having	Average	% of schools using	No. of schools having	Average	% of schools using
1.Charts	25	8.9	100.0	113	15.0	96.5
2.Graphs	2	4.0	50.0	20	4.0	85.0
3.Pictures/ photographs	22	5.5	90.9	46	10.3	95.6
4.Maps	87	17.5	96.5	191	17.8	96.8
5.Posters	4	5.5	100.0	22	7.6	90.9
6.Diagrams	1	5.0	100.0	21	4.0	85.7
7.Cartoons	1	15.0	100.0	1	2.0	0.0
8.Comic strips	0	0.0	0.0	1	2.0	100.0
9.Globes	71	1.3	95.7	153	1.5	92.2
10.Models	2	11.5	100.0	30	8.8	96.7
11.Specimens	0	0.0	0.0	8	9.0	87.5
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	1	12.0	100.0	0	0.0	0.0
14.Cassettes	1	7.0	100.0	15	6.7	80.0
15.Slides	3	52.7	100.0	4	62.5	75.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	1	4.0	0.0
18.Film strips	0	0.0	0.0	1	25.0	0.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

The prominent teaching aids used in teaching of social studies in the state of Uttar Pradesh were found to be charts, pictures/photographs maps and globes. The proportions of schools having these aids were 50.7, 18.4, 85.6 and 68.6 percent respectively. In every case the usage proportion was found to be more than 90 percent.

(v) Teaching of Language:

Among the four states, the prominent teaching aids found to be used in teaching of language at the secondary stage were charts, pictures / photographs and cassettes. It may be noted that the aids used in teaching of language are very few as compared to that of physical sciences, biological sciences, mathematics and social studies.

In the state of Jammu & Kashmir only one teaching aid, i.e., charts was used in teaching of language. All the 40 percent of schools who were possessing charts were using the same in the teaching the above subject.

Kerala state had charts, pictures/photographs and cassettes in 83.0, 12.3, 12.3 percent of schools respectively. The corresponding proportion of these schools who were using them in teaching of language were found to be 100.0 ,87.5 and 75.0 percent.

Only one teaching aid, i.e., pictures/photographs was found to be used in the state of Orissa. This aid was available in 17.8 percent of schools out of which 81.2 percent were using in teaching of language as a subject.

Table No. 4.3.10
Availability and Use of Teaching Aids in Teaching of Language at Secondary Stage

Teaching aids	Jammu & Kashmir No. of schools having	Jammu & Kashmir Average	Jammu & Kashmir % of schools using	Kerala No. of schools having	Kerala Average	Kerala % of schools using
1.Charts	14	8.7	100.0	15	15.1	100.0
2.Graphs	0	0.0	0.0	2	5.5	100.0
3.Pictures/ photographs	2	6.0	100.0	8	20.6	87.5
4.Maps	0	0.0	0.0	1	8.0	100.0
5.Posters	2	7.5	100.0	2	9.0	50.0
6.Diagrams	0	0.0	0.0	2	1.5	100.0
7.Cartoons	0	0.0	0.0	0	0.0	0.0
8.Comic strips	0	0.0	0.0	0	0.0	0.0
9.Globes	0	0.0	0.0	3	1.3	33.3
10.Models	0	0.0	0.0	1	9.0	100.0
11.Specimens	1	8.0	100.0	1	8.0	100.0
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	0	0.0	0.0	1	12.0	100.0
14.Cassettes	0	0.0	0.0	8	6.0	75.0
15.Slides	0	0.0	0.0	1	60.0	100.0
16.Flash cards	0	0.0	0.0	3	30.3	100.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video Cassettes	0	0.0	0.0	0	0.0	0.0

Table No. 4.3.10 (contd.)
Availability and Use of Teaching Aids in Teaching of Language at Secondary Stage

Teaching aids	Orissa No. of schools having	Orissa Average	Orissa % of schools using	Uttar Pradesh No. of schools having	Uttar Pradesh Average	Uttar Pradesh % of schools using
1.Charts	3	7.7	100.0	45	11.5	91.1
2.Graphs	0	0.0	0.0	0	0.0	0.0
3.Pictures/ photographs	16	4.5	81.2	22	11.0	86.3
4.Maps	0	0.0	0.0	16	4.2	93.7
5.Posters	1	2.0	100.0	13	9.1	100.0
6.Diagrams	0	0.0	0.0	2	4.5	100.0
7.Cartoons	1	10.0	100.0	4	23.2	75.0
8.Comic strips	1	10.0	100.0	1	10.0	100.0
9.Globes	0	0.0	0.0	2	1.5	100.0
10.Models	1	8.0	100.0	1	4.0	100.0
11.Specimens	0	0.0	0.0	3	14.3	100.0
12.Mockups	0	0.0	0.0	0	0.0	0.0
13.Puppets	2	5.5	100.0	2	2.5	0.0
14.Cassettes	4	6.7	100.0	13	12.1	61.5
15.Slides	2	50.5	100.0	1	95.0	100.0
16.Flash cards	0	0.0	0.0	0	0.0	0.0
17.Films	0	0.0	0.0	0	0.0	0.0
18.Film strips	0	0.0	0.0	0	0.0	0.0
19.Video Cassettes	0	0.0	0.0	1	20.0	100.0

In state of Uttar Pradesh only one teaching aid, i.e., charts was found to be utilized in the process of teaching language. Out of the total number of schools 20.2 percent possessed this aid and their usage proportion was found to be 91.1 percent.

(iv) Teaching of Music:

Among all the four states the picture of using teaching aids in teaching of music appears to be very dismal. This may be due to the fact that there may not be many aids available for teaching subject, like, music. Another reason could be that the number of schools offering this subject may be comparatively very small. However the cassettes were found

to be the only aid used in teaching of music in the states of Kerala and Uttar Pradesh. In the state of Kerala, this aid was available in 21.5 percent of schools and 76.8 percent of them were using it. The state of Uttar Pradesh had cassettes in 13.9 percent of schools out of which 74.2 percent were using in teaching of music.

(vii) Teaching of Fine Arts:

In teaching of fine arts at the secondary stage only one teaching aid, viz., charts was found to be used in the state of Uttar Pradesh alone. The other states had almost drawn blank in this respect. The reasons for such a situation could be similar as mentioned in the case of teaching of music.

(viii) Teaching of Home Science:

Among all the four states only the state of Uttar Pradesh reported the use of charts in teaching of home science as a subject. In this state 26.9 percent of schools had charts in them and 98.3 percent of these schools were using the same in teaching of above subject. The reason for such a picture could be that comparatively few schools, particularly girls schools, may be offering this subject to the students, secondly there may not be many aids available for teaching this subject.

4.4 Organisation of Other Educational Activities:

In order to provide other educational experiences than the normal classroom teaching certain activities like film shows, exhibitions, field trips and visit to museums were organised by the schools. What is the factual position in schools with regard to each of these activities is discussed under separate sections as under.

4.4.1 Organisation of Film Shows:

In the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh, the percentages of Middle schools who organised educational film shows during the year 1985 - 86 were found to be 69.9, 63.4, 98.5 and 72.9

respectively. It may be noted that Orissa state got the first rank among the four states. While comparing the picture between rural and urban areas the trend indicates that in all the states the proportion of schools organising film shows was found to be consistently higher in urban areas than the rural areas except the state of Kerala. In the state of Kerala, the two proportions were found to be more or less the same.

The Secondary/Higher Secondary schools who organised film shows were found to be 45.7, 55.4, 95.6 and 55.2 percent of total schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. Here also it may be noted that the proportions of schools organising film shows were found to be the highest in the state of Orissa. Further on comparison of rural and urban areas it was found that the proportion of the schools in the rural areas were consistently higher than the urban areas in all the states except the state of Jammu & Kashmir. In the state of Jammu & Kashmir the proportion of schools in urban areas was higher than that of rural areas.

Table No. 4.4.1
Schools Organised Educational Films Shows during the Year 1985 - 86

School type	Area	Jammu & Kashmir		Kerala		Orissa		Uttar Pradesh	
		schools	% to total	schools	% to total	schools	% to total	schools	% to total
Middle	Rural	51	68.9	71	63.4	253	98.4	257	70.2
Schools	Urban	7	77.8	14	63.6	13	100.0	79	83.2
	Total	58	69.9	85	63.4	266	98.5	336	72.9
Sec. /	Rural	9	36.0	26	63.4	69	95.2	74	58.3
Hr. Sec.	Urban	7	70.0	10	41.7	17	94.4	49	51.0
Schools	Total	16	45.7	36	55.4	86	95.6	123	55.2

An additional information about schools being member of film library

and how many films they had borrowed during the year 1985 - 86 was obtained. In all the four states not a single middle school was found to be member of any film library. The position of secondary/higher secondary schools being member of any film library was found to be nil in all the states except the state of Kerala. In the state of Kerala 38.5 percent of Secondary/ Higher Secondary Schools were found to be the members of the film libraries. The average number of the films per school borrowed from these libraries during the year 1985 - 86 was 10.7. The proportions of rural and urban schools as member of the film libraries were 32.0 and 50.0 percent respectively. The corresponding average number of films per schools borrowed during the year 1985 - 86 were 4.8 and 17.2 . It may be noted that urban schools were not only in higher proportion of being members of film libraries but also they borrowed maximum number of films from them as compared to rural schools.

4.4.2 Organisation of Exhibitions:

The middle schools, who organised exhibitions during the year 1985 - 86 were found to be highest (52.9%) in the state of Kerala. In the state of Jammu & Kashmir not a single middle school was found to be organising any exhibition whereas the figures for the states of Orissa and Uttar Pradesh were 3.4 and 3.5 percent respectively. While comparing the position of rural and urban middle schools it was found that in the state of Kerala 53.6 percent of rural middle schools and 50.0 percent of urban middle schools organised exhibitions. In the state of Orissa the proportion of rural middle schools was found to be 3.6 percent whereas not a single school was found in the urban areas. The proportion of the urban schools i.e., 11.1 percent in the state of Uttar Pradesh was found to be higher than the rural schools (1.8 %).

Table No. 4.4.2
Schools Organised Exhibitions for Different Subjects during the Year 1985-86

State	Area	Organised by Middle Schools				Organised by Sec./Hr.Sec Schools			
		No. of schools	Science	Social studies	other subjects	No. of schools	Science	Social studies	Other subjects
Jammu & Kashmir	Rural	....NIL....				0	0	0	0
	Urban					1	1	0	0
	Total					1	1	0	0
Kerala	Rural	60	56	19	19	22	20	7	4
	Urban	11	11	6	2	22	20	5	5
	Total	71	67	25	21	44	40	12	9
Orissa	Rural	9	4	4	3	5	5	0	2
	Urban	0	0	0	0	9	7	0	3
	Total	9	4	4	3	14	12	0	5
Uttar Pradesh	Rural	7	4	3	1	15	8	7	3
	Urban	9	2	5	5	29	18	10	9
	Total	16	6	8	6	44	26	17	12

Table No. 4.4.3
Schools According to Exhibits Prepared for Display in Exhibition by Students, Teachers and Outside Agencies.

State	Area	Middle Schools				Sec./ Hr. Secondary Schools			
			Exhibits prepared by				Exhibits prepared by		
		Organised exhibition	students	teachers	out side agency	Organised exhibition	students	teachers	out side agency
Jammu & Kashmir	Rural	0	0	0	0	0	0	0	0
	Urban	0	0	0	0	1	1	0	0
	Total	0	0	0	0	1	1	0	0
Kerala	Rural	60	58	30	0	22	22	10	1
	Urban	11	11	4	0	22	22	7	1
	Total	71	69	34	0	44	44	17	2
Orissa	Rural	9	8	1	0	5	5	4	1
	Urban	0	0	0	0	9	9	2	0
	Total	9	8	1	0	14	14	6	1
Uttar Pradesh	Rural	7	4	1	2	15	13	8	1
	Urban	9	9	2	0	29	26	8	1
	Total	16	13	3	2	44	39	16	2

The subjects catered by these exhibitions were general science and social studies. The number of exhibitions organised for general science was found to be higher than that of social studies. Further, it may be noted that a good number of exhibitions were organised for general education.

In middle schools some of the exhibits displayed in the exhibitions were prepared by the students and teachers. In the state of Kerala 97.2 percent of schools had exhibits prepared by the students and 47.9 percent of schools got exhibits prepared by the teachers. For the states of Orissa and Uttar Pradesh the respective percentages were 88.9, 11.1 and 81.1, 18.8.

The number of Secondary/ Higher Secondary Schools who organised the exhibitions during the year 1985 - 86 were found to be 67.7, 15.1 and 19.9 for the states of Kerala, Orissa and Uttar Pradesh respectively. In the state of Jammu & Kashmir only one such school has reported to have organised the exhibition. While comparing the rural versus urban schools it was found that the proportion of the urban schools was consistently higher than that of rural schools.

The majority of schools organised exhibitions catering to science and social studies. Few exhibitions were also organised to cater other subjects than the science and social studies.

The majority of the schools in all the states reported that the exhibits displayed in the exhibitions were prepared by the students. Approximately 40 percent of these schools reported that the exhibits displayed in the exhibition were prepared by teachers also. Further a very few schools reported that the exhibits were got prepared through the outside agencies.

4.4.3 Organisation of Field Trips:

Generally schools organise field trips for the students of a particular class or standard which may be a part of middle, secondary or higher secondary school. In order to find out the number of schools who organised field trips during 1985 - 86 for a particular class, such schools were pooled together at the time of analysis. It may also be mentioned that in the state of Kerala and Orissa classes V, VI and VII are part of the middle stage and classes VIII, IX and X are part of secondary stage whereas in other states the classes for middle and secondary stages are VI to VIII and IX to X respectively.

Table No. 4.4.4
Schools Organised Field Trips during the Year 1985 - 86

		Jammu & Kashmir				Kerala			
Area	Classes	Total schools	Schools organised field trips	One trip	Two or more trips	Total schools	Schools organised field trips	One trip	Two or more trips
Rural	V	–	.	–	–	145	61	52	9
	VI	99	2	2	0	145	65	56	9
	VII	99	2	1	1	145	67	56	11
	VIII	99	2	0	2	41	23	15	8
	IX	25	3	2	1	41	26	17	9
	X	25	2	1	1	41	26	18	8
Urban	V	–	–	–	–	44	24	18	6
	VI	19	0	0	0	44	24	16	8
	VII	19	0	0	0	44	24	14	10
	VIII	19	0	0	0	24	16	9	7
	IX	10	0	0	0	24	16	9	7
	X	10	2	0	0	24	16	10	6
Total	V	–	–	–	–	187	85	70	15
	VI	118	2	2	0	187	89	72	17
	VII	118	2	1	1	187	91	70	21
	VIII	118	2	0	2	65	39	24	15
	IX	35	3	2	1	65	42	26	16
	X	35	4	1	1	65	42	28	14

Table No. 4.4.4(contd.)
Schools Organised Field Trips during the Year 1985 - 86

Area	Classes	Orissa				Uttar Pradesh			
		Total schools	Schools organised field trips	One trip	Two or more trips	Total schools	Schools organised field trips	One trip	Two or more trips
Rural	V	271	23	22	1	-			-
	VI	271	48	46	2	493	35	30	5
	VII	271	48	45	3	493	35	30	5
	VIII	72	28	25	3	493	39	31	8
	IX	72	33	29	4	127	15	12	3
	X	72	32	28	4	127	16	13	3
Urban	V	28	3	3	0		-	-	-
	VI	28	6	5	1	191	39	29	10
	VII	28	7	6	1	191	39	29	10
	VIII	18	9	9	0	191	40	31	9
	IX	18	10	10	0	96	22	14	8
	X	18	9	9	0	96	25	18	7
Total	V	299	26	25	1	-	-	-	
	VI	299	54	51	3	684	74	59	15
	VII	299	55	51	4	684	74	59	15
	VIII	90	37	34	3	684	79	62	17
	IX	90	43	39	4	223	37	26	11
	X	90	41	37	4	223	41	31	10

The proportions of schools who organised field trips for classes V to X were found to be the highest ranging from 45.4 to 64.6 in the state of Kerala among the four states. The figures for the state of Jammu & Kashmir were found to be the lowest (ranging from 1.7 to 11.7 for classes VI to X). Further it was noted that the classwise proportions of urban schools in the states of Kerala, Orissa and Uttar Pradesh were found to be higher than that of rural schools.

Further it was found that in the state of Kerala and Uttar Pradesh the highest number of field trips were organised for general purposes as compared to any particular subject. In the state of Orissa the highest number of field trips were catering to the subject of social studies.

Table No. 4.4.5
The Field Trips Organised for different Subjects during the Year 1985 - 86

		Jammu & Kashmir				Kerala				Orissa				Uttar Pradesh			
Area	Classes	Sc	SS	Lang.	Gen.	Sc.	SS	Lang.	Gen.	Sc	SS	Lang.	Gen.	Sc	SS	Lang	Gen
Rural	V	0	0	0	0	4	7	0	42	1	8	1	5	0	0	0	1
	VI	1	2	0	0	6	9	0	39	7	14	0	12	2	9	0	15
	VII	0	3	0	0	5	7	0	43	6	12	0	13	2	8	0	16
	VIII	0	3	0	0	0	1	0	19	2	13	0	5	3	9	0	16
	IX	1	1	0	0	2	1	0	20	3	14	0	8	2	4	0	6
	X	0	1	0	0	1	3	0	19	3	13	1	7	3	4	0	6
Urban	V	0	0	0	0	1	2	0	13	1	1	0	0	0	0	0	6
	VI	0	0	0	0	1	2	0	13	1	4	0	0	4	7	1	24
	VII	0	0	0	0	1	2	0	13	3	3	0	0	3	10	1	22
	VIII	0	0	0	0	1	2	0	8	4	3	0	1	4	10	1	23
	IX	0	0	0	0	2	1	0	8	5	3	0	1	2	3	0	12
	X	2	0	0	0	2	1	0	8	4	3	0	1	6	4	1	10
Total	V	0	0	0	0	5	9	0	55	2	9	1	5	0	0	0	7
	VI	1	2	0	0	7	11	0	52	8	18	0	12	6	16	1	39
	VII	0	3	0	0	6	9	0	56	9	15	0	13	5	18	1	38
	VIII	0	3	0	0	1	3	0	27	6	16	0	6	7	19	1	39
	IX	1	1	0	0	4	2	0	28	8	17	0	9	4	7	0	18
	X	2	1	0	0	3	4	0	27	7	16	1	8	9	8	1	16

Sc. - Science ; SS - Social Studies ; Gen. General ; Lang. - Language

4.4.4 Museums in Schools:

Among the four states museums were available in 7 (5.2 %) middle schools of Kerala, one school of Orissa and one school of Uttar Pradesh. Not a single school had reported to be having museum in the state of Jammu & Kashmir, Five schools of Kerala and both the schools of Orissa and Uttar Pradesh had specimens up to 100. The remaining two schools of Kerala had more than 100 specimens in them. Further it may be noted that all these schools having museum in the states of Kerala, Orissa and Uttar Pradesh were located only in rural areas.

Table No. 4.4.6
Schools having Museums and Number of Specimens in Them

State	Area	Middle schools Having museum	No. of specimens Up to 100	100 - 200	Above 200	Sec./ Hr.Sec. schools Having museum	No. of specimens Up to 100	100 - 200	Above 200
Jammu & Kashmir	Rural	0	0	0	0	0	0	0	0
	Urban	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0
Kerala	Rural	[illegible]	[illegible]	1	1	1	1	0	0
	Urban	[illegible]	0	0	0	4	3	1	0
	Total	[illegible]	[illegible]	1	1	5	4	1	0
Orissa	Rural	1	1	0	0	0	0	0	0
	Urban	0	0	0	0	0	0	0	0
	Total	1	1	0	0	0	0	0	0
Uttar Pradesh	Rural	1	1	0	0	10	10	0	0
	Urban	0	0	0	0	12	9	0	3
	Total	1	1	0	0	22	19	0	3

Secondary and Higher Secondary schools had museums only in two states i.e., Kerala and Uttar Pradesh. The respective proportions were found to be 7.7 and 9.9 respectively. Such schools were located more in Urban areas than in the rural areas. The largest proportion of schools having museums had specimens upto 100 in them. Only one school in the state of Kerala had specimens between 100 to 200 and three schools in the state of Uttar Pradesh had more than 200 specimens in them.

4.5 Procurement of Teaching Aids:

Normally the teaching aids are purchased by the head of the institution, by a committee or by the concerned subject teacher. Some times they are also supplied directly by the department of education. What is the procedure followed in this regard by the different states is presented as follows.

Table No. 4.5.1
Schools Procuring Teaching Aids

State	Area	Middle schools On the suggestion of				Sec./ Hr. Sec. schools On the suggestion of			
		Head of institute	Subject teacher	Committee	others	Head of institute	Subject teacher	Committee	Others
Jammu & Kashmir	Rural	21	21	14	15	9	3	10	3
	Urban	2	1	4	2	2	1	7	0
	Total	23	22	18	17	11	4	17	3
Kerala	Rural	24	3	31	54	10	0	17	14
	Urban	6	0	8	8	6	1	13	4
	Total	30	3	39	62	16	1	30	18
Orissa	Rural	38	57	133	26	3	7	56	6
	Urban	0	1	9	1	1	2	13	2
	Total	38	58	142	27	4	9	69	8
Uttar Pradesh	Rural	76	129	42	83	29	17	76	5
	Urban	4	46	25	10	16	12	66	2
	Total	80	175	67	93	45	29	142	7

In the state of Jammu & Kashmir the highest proportion of middle schools where the teaching aids were purchased on the suggestion of the heads of the institutions was 27.7 percent. The second highest proportion of schools was 26.5 percent where the teaching aids were purchased on the suggestion of subject teacher. In the state of Kerala the highest proportion (29.1 %) was found to be of those schools who procured the teaching aids through a committee constituted for the purpose. THe second highest position (22.4 %) comes of the schools where it is purchased by the heads of the institutions. The state of Orissa reported highest proportion i.e., 53.2 percent of schools procuring teaching aids through a committee. The second position in this regard was of schools where teaching aids were procured on the suggestion of subject teachers. In the state of Uttar Pradesh the schools procuring teaching aids through subject teachers were found to be 37.8 percent, the highest. The teaching aids procured by the

heads of the institutions in 17.3 percent schools got the second position.

In Secondary /Higher Secondary schools the highest proportion for the procurement of teaching aids was found to be through a committee in all the four states. These proportions were 48.6 for the state of Jammu & Kashmir, 46.1 for the state of Kerala, 70.9 for the state of Orissa and 64.2 for the state of Uttar Pradesh. The second highest position was of those schools who procured teaching aids through the heads of institutions in all the four states.

4.6 Maintenance of Teaching Aids Records:

The middle schools who were maintaining records of teaching aids were 30.0, 36.0, 1.0 and 27.0 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The proportion of these schools in rural areas was comparatively higher than that of urban areas. The upto date list of teaching aids was found to be highest i.e.,65 percent of schools in the state of Kerala whereas the largest proportion was found to be 30 percent in the state of Jammu & Kashmir.

The number of Secondary/ Higher Secondary schools maintaining records of teaching aids were 54, 45, 4 and 45 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The highest number of schools who maintained upto date list of teaching aids were 89 percent in the state of Kerala and such proportion was found to be largest i.e., 36 percent for the state of Orissa.

As regards the maintenance of stock register and its periodical physical verification is concerned it was found that a large proportion of schools were not maintaining any stock register for teaching aids.

Table No. 4.6.1
Schools Maintaining Records and Upto date List of Teaching Aids

State	Area	Maintained records by						Upto date list available in					
		Middle schools	%	Sec/Hr. sec. schools	%	Total	%	Middle schools	%	Sec/Hr. sec. schools	%	Total	%
Jammu & Kashmir	Rural	23	31	16	64	39	39	24	32	14	56	38	38
	Urban	2	22	3	30	5	26	1	11	2	20	3	16
	Total	25	30	19	54	44	37	25	30	16	46	41	35
Kerala	Rural	40	36	15	37	55	36	76	68	37	90	113	74
	Urban	8	36	14	58	22	48	11	50	21	88	32	70
	Total	48	36	29	45	77	39	87	65	58	89	145	73
Orissa	Rural	3	1	3	4	6	2	101	39	22	31	123	37
	Urban	0	0	1	6	1	3	6	46	10	56	16	52
	Total	3	1	4	4	7	2	107	40	32	36	139	39
Uttar Pradesh	Rural	108	30	53	42	161	33	168	46	67	53	235	48
	Urban	16	17	47	49	63	33	44	46	54	56	98	61
	Total	124	27	100	45	224	33	212	46	121	54	333	49

The middle schools, maintaining stock register, were found to be highest (89.2 %) in the state of Uttar Pradesh and 61.4 percent, the lowest in the state of Jammu & Kashmir. In majority of these schools physical verification was done every year. There were 18 percent of schools in the state of Jammu & Kashmir where physical verification was done once in three years. Further it may be noted that in Uttar Pradesh about six percent of schools never had physical verification done though they maintained a separate stock register.

The Secondary/Higher Secondary Schools maintaining stock register were found to be the highest (86.4 %) in the state of Uttar Pradesh whereas the lowest proportion i.e., 74.2 percent was in the state of Orissa. The majority of these schools had physical verification done every year. The highest proportion of schools who never got the physical verification done was 10.5 percent in the state of Uttar Pradesh.

Table No. 4.6.2
Schools Maintaining Stock Register and Having Physical Verification

		Middle schools having physical verification					Sec/Hr. Sec. schools having physical verification				
		Stock register	Once in year	Once in 2 year	Once in 3 year	never	Stock register	Once in year	Once in 2 year	Once in 3 year	never
Jammu & Kashmir	Rural	44	30	0	13	1	19	14	2	1	2
	Urban	7	5	0	2	0	8	7	0	1	0
	Total	51	35	0	15	1	27	21	2	2	2
Kerala	Rural	74	62	8	2	2	33	29	2	2	0
	Urban	12	10	0	1	1	21	20	0	1	0
	Total	86	72	8	3	3	54	49	2	3	0
Orissa	Rural	200	186	1	2	11	55	49	1	0	5
	Urban	7	6	0	0	1	14	13	0	0	1
	Total	207	192	1	2	12	69	62	1	0	6
Uttar Pradesh	Rural	324	296	7	0	21	110	91	2	4	13
	Urban	89	84	0	1	4	81	70	4	0	7
	Total	413	380	7	1	25	191	161	6	4	20

4.7 Maintenance Servicing of Teaching Aids Equipments:

Certain equipments like radio, tape recorder, television and projectors are very effective and useful in the teaching learning process. They can be properly utilised if they are properly maintained in working order. In order to keep them in working condition a regular facility of maintenance services is very much needed. It was considered important to know as to how schools had access to maintenance services for these equipments.

4.7.1 Radios:

Radio was available in 24.1 percent, 68.7 percent, 15.4 percent and 4.1 percent of middle schools in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. Out of these schools, the largest proportion i.e., 40 percent in the state of Jammu & Kashmir was not having any kind of maintenance services whereas all the schools in the state of

Orissa had provision of maintenance services either on regular or adhoc basis. The proportions of schools in the states of Kerala and Uttar Pradesh who did not have any kind of servicing arrangements were 22 percent and 13 percent respectively.

The number of Secondary/Higher Secondary schools having radios in them were 74.3, 81.5, 40.9 and 54.8 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. These schools had maintenance service arrangement on adhoc or regular basis in 69.2, 90.6, 92.1 and 82.3 percent of them respectively. It may be noted that about 31 percent of the schools in the state of Jammu & Kashmir did not have any kind of maintenance service arrangements.

4.7.2 Tape Recorder:

Among the four states, only two states i.e., Kerala and Uttar Pradesh had tape recorders in 3.7 and 2.6 percent of middle schools. Out of these schools about 40 percent in the state of Kerala and 83 percent in the state of Uttar Pradesh had provision of maintenance services on adhoc or regular basis.

The position of availability of tape recorders in Secondary/Higher Secondary schools was comparatively better than the middle schools. The highest proportion (41.3 %) was found to be in the state of Kerala as against the 5.7 percent, the lowest in the state of Jammu & Kashmir. The schools having provision of adhoc or regular maintenance services was found to be more or less equal (95 %) in the state of Kerala and Uttar Pradesh. In the state of Jammu & Kashmir and Orissa such facility was available in 50 percent and 83.3 percent of schools respectively..rm79.ls1

Table No. 4.7.1
Schools According to Maintenance Service of Equipments

Middle schools

State	Area	Radio			Tape recorder			Television			Projectors		
		Total	Ad-hoc	Regular	Total	Ad-hoc	Regular	Total	Ad-hoc	Regular	Total	Ad-hoc	Regular
Jammu & Kashmir	Rural	19	6	6	0	0	0	1	0	0	0	0	0
	Urban	1	0	0	0	0	0	2	0	0	0	0	0
	Total	20	6	6	0	0	0	3	0	0	0	0	0
Kerala	Rural	74	39	17	3	1	1	0	0	0	2	1	0
	Urban	18	10	3	2	0	0	0	0	0	3	0	0
	Total	92	49	20	5	1	1	0	0	0	5	1	0
Orissa	Rural	41	35	6	0	0	0	1	1	0	1	0	0
	Urban	0	0	0	0	0	0	0	0	0	0	0	0
	Total	41	35	6	0	0	0	1	1	0	1	0	0
Uttar Pradesh	Rural	11	6	2	5	2	3	4	3	1	0	0	0
	Urban	8	4	4	7	3	2	4	3	1	1	0	0
	Total	19	10	6	12	5	5	8	6	2	1	0	0

Table No. 4.7.1 (Contd)
Schools According to Maintenance Service of Equipments

Sec. / Hr. Sec. schools

State	Area	Radio			Tape recorder			Television			Projectors		
		Total	Ad-hoc	Regular	Total	Ad-hoc	Regular	Total	Ad-hoc	Regular	Total	Ad-hoc	Regular
Jammu & Kashmir	Rural	21	8	5	2	0	1	4	0	1	1	0	0
	Urban	5	3	2	0	0	0	0	0	0	0	0	0
	Total	26	11	7	2	0	1	4	0	1	1	0	0
Kerala	Rural	32	22	9	12	8	3	3	2	1	25	6	4
	Urban	21	13	6	15	9	3	5	3	1	19	8	4
	Total	53	35	15	27	17	6	8	5	2	44	14	8
Orissa	Rural	29	19	9	8	6	0	2	2	0	6	2	0
	Urban	9	6	1	4	4	0	3	3	0	3	1	0
	Total	38	25	10	12	10	0	5	5	0	9	3	0
Uttar Pradesh	Rural	62	32	22	35	21	8	30	13	13	6	2	2
	Urban	59	32	16	31	21	7	15	9	4	18	9	0
	Total	121	64	38	66	42	15	45	22	17	24	11	2

4.7.3 Television:

The number of Middle schools having televisions was found to be very small. The state of Kerala reported having no television in any of the middle schools. Only one Middle school in the state of Orissa had television in it. The proportion of such schools was 3.6 each in the state of Jammu & Kashmir and Uttar Pradesh. In the state of Jammu & Kashmir the schools did not have any kind of maintenance services whereas the state of Uttar Pradesh had such provision either on adhoc or regular basis.

Televisions were available in Secondary/Higher Secondary schools of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh in 11.4, 12.3, 5.4 and 20.4 percent of them. The state of Orissa had arrangement of adhoc maintenance service in all the schools. In the state of Jammu & Kashmir, Kerala and Uttar Pradesh the provision of adhoc or regular maintenance service was available in 25.0, 87.5 and 87.8 percent of schools respectively.

4.7.4 Projectors:

Projectors were available in 3.7 percent of Middle schools of Kerala alone which is the highest among all the four states. Not a single Middle school was found to be having projectors in the state of Jammu & Kashmir whereas one school in each of the states of Orissa and Uttar Pradesh had projectors in them. Out of all these schools having projectors only one school in the state of Orissa had adhoc arrangement of servicing of projectors.

The number of Secondary/Higher Secondary schools having projectors were 2.8, 67.7, 9.7 and 10.8 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The schools in Jammu & Kashmir did not have any provision of maintenance service for projectors.

In the state of Orissa an adhoc provision for 33 percent of schools was available. In the states of Kerala and Uttar Pradesh the maintenance service on adhoc or regular basis was available in 50 percent and 54 percent of schools respectively.

4.8 Expenditure on Teaching aids and Fee charged from Students:

The information regarding expenditure incurred for the previous three years i.e 1983 - 84, 1984 - 85 and 1985 - 86 was obtained for Middle schools and Secondary/Higher Secondary schools in the four selected states. In addition to this how many of these schools were charging separate fees for teaching aids from students was also obtained.

The proportions of Middle schools incurring expenditure on teaching aids were found to be the highest i.e.,60.4, 62.0 and 60.4 percent in the state of Kerala and the corresponding lowest figures in the state of Uttar Pradesh were 6.9, 7.1 and 8.4 percent during the previous three years i.e., 1983 - 84, 1984 - 85 and 1985 - 86 respectively. Further it was obseved that the number of Middle schools incurring expenditure on teaching aids increased in the subsequent years as compared to the year 1983 - 84. This trend was observed in all the four states. It was also found that the Middle schools in the state of Kerala and Uttar Pradesh comparatively spent more on teaching aids than the state of Jammu & Kashmir and Orissa.

The number of schools charging separate fees for teaching aids in the states pf Kerala, Orissa and Uttar Pradesh was 60.4, 22.1 and 7.3 percentrespectively. The state of Jammu & Kashmir did not charge any separate fee for this purpose.

The number of Secondary/Higher Secondary schools incurring expenditure on teaching aids during the year 1983-84, 1984-85 and 1985-86 were found to be the highest (76.9, 69.2 and 73.8 percent) in the state of Kerala whereas

Table No. 4.8.1
Schools According to Yearwise Expenditure on Teaching Aids and Separate Fee Charged from Students for Teaching Aids

		Middle schools						
			Expenditure (in Rs.)					
State	Year	Total	Upto 250	251 to 500	501 to 750	751 to 1000	more than 1000	charging separate fee
Jammu & Kashmir	1983-84	83	9	1	1	0	1	
	1984-85	83	13	1	1	1	0	
	1985-86	83	12	2	2	1	1	0
Kerala	1983-84	134	43	18	7	7	6	
	1984-85	134	37	26	9	7	4	
	1985-86	134	35	23	10	8	5	43
Orissa	1983-84	267	29	1	1	1	0	
	1984-85	267	31	2	0	1	0	
	1985-86	267	40	3	0	0	0	59
Uttar Pradesh	1983-84	463	11	11	4	2	4	
	1984-85	463	8	13	3	3	6	
	1985-86	463	12	10	4	4	9	34

Table No. 4.8.1 (contd.)
Schools According to Yearwise Expenditure on Teaching Aids and Separate Fee Charged from Students for Teaching Aids

		Secondary/Higher secondary schools						
			Expenditure (in Rs.)					
State	Year	Total	Upto 500	501 to 1000	1000 to 2000	2001 to 5000	more than 5000	charging separate fee
Jammu & Kashmir	1983-84	35	11	0	1	0	1	
	1984-85	35	13	2	0	0	0	
	1985-86	35	9	2	2	0	0	0
Kerala	1983-84	65	17	15	7	10	1	
	1984-85	65	14	11	12	6	2	
	1985-86	65	16	10	15	6	1	25
Orissa	1983-84	93	14	1	2	1	0	
	1984-85	93	9	3	3	3	0	
	1985-86	93	21	4	3	3	0	16
Uttar Pradesh	1983-84	221	33	10	16	13	11	
	1984-85	221	32	12	12	17	16	
	1985-86	221	36	18	10	15	22	30

the lowest figures (22.6, 22.6 and 36.5 percent) were in the state of Orissa. The amount of expenditure was more in the schools of Kerala and Uttar Pradesh as compared to the schools of Jammu & Kashmir and Orissa.

The states of Kerala, Orissa and Uttar Pradesh charged separate fee for teaching aids in 38.5, 17.2 and 13.6 percent of schools respectively. It may be noted that the state of Jammu & Kashmir was not charging any fee for teaching aids from the students.

4.9 Schools having Room / Hall for Projection Purposes:

The number of Middle schools having provision of room/hall for projection purposes were 16.9, 20.1, 20.2 and 6.0 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The number of schools having adequate provisions for electric points, darkening etc. in the projection room/hall was 81.5 percent in the state of Kerala which was the highest among the states. Further it may be noted that 78 percent and 72 percent of schools in the states of Kerala and Orissa respectively had projection room/hall with seating capacity for more than 100 students whereas in the remaining schools the seating capacity of projection rooms or halls was generally less than 100.

The number of Secondary/Higher Secondary schools having rooms/halls for projection purposes were 28.6, 50.8, 31.2 and 24.9 in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. More than 85 percent of these schools in all the four states had adequate provisions of electric points, darkening etc., in the projection room / halls. In the state of Jammu & Kashmir, the seating capacity of projection rooms/halls was upto a maximum of 200 students whereas in other states, there were schools having rooms/halls with the seating capacity for more than 200 students also. The number of schools having projection halls with seating

Table No. 4.9.1
Schools Having Room/Hall for Projection Purposes

State	Area	Middle schools					
		No. having	Adequate provision	Seating Capacity			
				upto 100	101 to 200	201 to 300	above 300
Jammu & Kashmir	Rural	12	2	12	0	0	0
	Urban	2	1	2	0	0	0
	Total	14	3	14	0	0	0
Kerala	Rural	17	14	4	5	3	5
	Urban	10	8	2	2	4	2
	Total	27	22	6	7	7	7
Orissa	Rural	53	24	14	24	14	1
	Urban	1	1	1	0	0	0
	Total	54	25	15	24	14	1
Uttar Pradesh	Rural	11	4	9	1	0	1
	Urban	17	15	13	3	0	1
	Total	28	19	22	4	0	2

Table No. 4.9.1 (contd.)
Schools Having Room/Hall for Projection Purposes

State	Area	Secondary/Hr. Secondary schools					
		No. having	Adequate provision	Seating Capacity			
				upto 100	101 to 200	201 to 300	above 300
Jammu & Kashmir	Rural	4	4	4	0	0	0
	Urban	6	6	4	2	0	0
	Total	10	10	8	2	0	0
Kerala	Rural	19	16	5	5	1	8
	Urban	14	12	7	3	1	3
	Total	33	28	12	8	2	11
Orissa	Rural	25	21	7	8	7	3
	Urban	4	4	0	1	1	2
	Total	29	25	7	9	8	5
Uttar Pradesh	Rural	22	20	5	7	5	5
	Urban	33	29	6	7	5	15
	Total	55	49	11	14	10	20

capacity of more than 200 were 39.4, 14.8 and 54.5 percent for the states of Kerala, Orissa and Uttar Pradesh respectively.

4.10 Schools having Teaching Aid Room:

The number of Middle schools having separate teaching aid room were found to be very few. The highest percentage i.e., 6.0 was in the state of Uttar Pradesh whereas the lowest i.e., 1.5 percent, was of Orissa. In the absence of such a facility the teaching aids had to be kept at some place. In the state of Jammu & Kashmir 84.3 percent of schools reported that they had no fixed place for keeping the teaching aids. A similar picture was found in the states of Kerala and Uttar Pradesh. The state of Orissa reported that in about 95 percent of schools, the aids are located at one place.

The number of Secondary/Higher Secondary schools having teaching aid room were 1.2, 47.7, 7.5 and 17.2 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. The schools not having facility of separate teaching aid room reported that in the state of Jammu & Kashmir about 83 percent of schools did not have any fixed place to keep the teaching aids. Similar position was found in 40 percent and 35 percent of schools in the states of Kerala and Uttar Pradesh. In the state of Orissa 69 percent of schools were keeping teaching aids at one place whereas in the state of Uttar Pradesh 49 percent were keeping common aids at one place and subjectwise aids at different places.

Table No. 4.10.1
Schools Having Teaching Aid / Audio Visual Room and Location of Teaching Aids Where No Such Room is Available

		Middle schools				Sec./Hr.sec.schools			
			Location of aids where no room is available				Location of aids where no room is available		
State	Area	Having T.Aid room	One place	different places	No fixed place	Having T.aid room	one place	different places	No fixed place
Jammu & Kashmir	Rural	1	10	3	61	1	1	2	22
	Urban	1	0	0	9	0	1	2	7
	Total	2	10	3	70	1	2	4	29
Kerala	Rural	3	31	38	43	19	9	14	18
	Urban	3	4	6	12	12	8	8	8
	Total	6	35	44	55	31	17	22	26
Orissa	Rural	3	242	4	11	5	51	10	11
	Urban	1	11	0	2	2	13	4	1
	Total	4	253	4	13	7	64	14	12
Uttar Pradesh	Rural	18	109	27	230	27	20	60	47
	Urban	10	22	10	63	11	17	49	30
	Total	28	131	37	293	38	37	109	77

4.11 Teachers Undergone Inservice Training in Teaching aids:

The number of Middle schools having at least one teacher who had undergone inservice training programme for preparation of teaching aids were 4.8, 12.7, 3.4 and 4.7 percent in the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively. This indicates that there were very few schools who have got such trained teachers.

The position of Secondary/Higher Secondary schools having teachers trained in preparation of teaching aids was also poor. The highest proportion of such schools was 23.1 for the state of Kerala. The second highest was the state of Uttar Pradesh where 9 percent of schools had such trained teachers. The states of Jammu & Kashmir and Orissa reported only one such school in each of them.

Table No. 4.11.1
Schools According to Number of Teachers Undergone Inservice Training in Teaching Aids

		Middle schools with Teachers undergone inservice training				Sec./Hr. Sec schools with teachers undergone inservice training			
State	Area	total	one	two	more than 2	total	one	two	more than 2
Jammu & Kashmir	Rural	4	3	1	0	0	0	0	0
	Urban	0	0	0	0	1	1	0	0
	Total	4	3	1	0	1	1	0	0
Kerala	Rural	16	6	7	3	7	2	4	1
	Urban	1	0	1	0	8	4	2	2
	Total	17	6	8	3	15	6	6	3
Orissa	Rural	9	7	2	0	0	0	0	0
	Urban	0	0	0	0	1	0	1	0
	Total	9	7	2	0	1	0	1	0
Uttar Pradesh	Rural	18	10	3	5	9	3	0	6
	Urban	4	0	3	1	11	4	1	6
	Total	22	10	6	6	20	7	1	12

4.12 Teaching aids Required by the Schools:

It has been observed that the schools do not have various type of teaching aids available with them. Even if they are available they are generally inadequate. Hence the information regarding requirement of different types of teaching aids by the schools was collected. The requirement of teaching aids was according to the teaching of various subjects, viz., physical science, biological science, mathematics, social studies and language at middle and secondary stages of the schools. In all 20 aids were identified. These aids were further ranked in the order of priority for each subject and for each stage separately. The first 10 teaching aids in the order of priority requirement are listed subjectwise as under.

Table No. 4.12.1
Schools Requiring Additional Teaching aids

Teaching aids	Physical Science Middle stage	Physical Science Sec. stage	Biological Science Middle stage	Biological Science Sec. stage	Mathematics Middle stage	Mathematics Sec. stage	Social Studies Middle stage	Social Studies Sec. stage	Language Middle stage	Language Sec. stage
1.Charts	526	172	686	187	365	80	474	177	535	105
2.Graphs	15	5	8	11	285	111	34	8	29	4
3.Pictures/ photographs	24	10	70	3	8	2	164	42	569	145
4.Maps	43	14	36	14	48	10	737	220	40	19
5.Posters	42	6	25	8	19	6	45	17	104	32
6.Diagrams	83	19	68	28	72	22	18	7	23	11
7.Cartoons	6	3	3	1	3	3	12	5	57	14
8.Comic stripes	3	0	0	0	1	0	7	5	31	18
9.Globes	2	2	6	0	13	1	353	84	8	0
10.Models	273	120	461	209	287	105	169	81	117	27
11.Specimens	64	12	231	109	3	1	9	4	3	0
12.Mockups	15	0	4	1	2	0	3	3	3	5
13.Puppets	5	0	1	2	3	0	4	2	44	8
14.Cassettes	3	2	2	2	3	0	4	6	20	23
15.Slides	39	11	60	36	14	8	8	13	12	5
16.Flashcards	9	4	10	0	10	2	5	0	54	9
17.Films	20	8	15	9	4	3	9	7	4	5
18.Film stripes	6	5	5	5	1	0	2	1	1	1
19.Video Cassettes	1	1	6	2	1	0	1	1	4	0
20.Atlas	0	0	0	0	0	0	5	1	0	0

Physical Science

Middle stage	Charts, Models, Diagrams, Specimens, Maps Posters, Slides, Pictures/photographs, Films and Mockups.
Secondary stage	Charts, Models, Diagrams, Maps, Specimens, Slides, Pictures/photographs, Films, Posters and Graphs.

Biological Science

Middle Stage	Charts, Models, Specimens, Pictures/photographs, Diagrams, Flashcards, Maps, Posters, Films and Graphs.
Secondary Stage	Models, Charts, Specimens, Slides Graphs, Films, Posters and Film s

Mathematics

Middle Stage	Charts, Models, Graphs, Diagrams, Maps, Posters, Slides, Globes, Flashcards and Pictures/photographs.
Secondary Stage	Graphs, Models, Charts, Diagrams, Maps, Slides, Posters, Cartoons, Films and Pictures/photographs.

Social Studies

Middle Stage	Maps, Charts, Globes, Models, Pictures / Photographs, Posters, Graphs, Diagrams, cartoons and Specimens.
Secondary Stage	Maps, Charts, Globes, Models, Pictures / Photographs, Posters, Slides, Diagrams, Films and Cassettes.

Language

Middle Stage	Pictures/photographs, Charts, Models, Posters, Cartoons, Flashcards, Puppets, Maps, Comic stripes and Graphs.
Secondary Stage	Pictures/photographs, Charts, Posters, Models, Cassettes, Comic stripes, Cartoons, Diagrams, Flash cards and Puppets.

Besides the above requirements of teaching aids certain equipments are also needed on priority basis. These are film projectors, slide projectors, video cassettes recorder/players, tape recorders, televisions and radios.

The findings of the study are summarised in the next chapter captioned (Chapter V).

CHAPTER V

SUMMARY OF THE FINDINGS

The present study aimed at to find out the availability and extent of utilization of different types of teaching aids at the middle and secondary stages of the school. For the purpose, a four percent sample of schools, having these stages, was selected from four states, viz., Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh. In all 1361 (97.2 %) schools, out of a total sample of 1400 schools, participated in the study. The information collected on various dimensions was availability and working conditions of teaching aids, use of teaching aids in teaching of different subjects, viz., physical science, biological science, mathematics, social studies, language, music , fine arts and home science; organisation of other educational activities, namely, film shows, field trips etc.; procedure adopted for procurement of teaching aids; their storage facility and access to maintenance service facility; expenditure incurred on teaching aids and separate fee charged from the students; teachers undergone inservice training programme of teaching aids; and additional aids required by the schools. The major findings of the study are summarised as under.

5.1 Middle Schools having Teaching aids and Their Working Conditions:

(i) The prominent teaching aids available in more than 50 percent of Middle schools in any of the four states were blackboards, charts, maps, globes, models and radios.

(ii) The other teaching aids available between 20 to 50 percent of schools were roll - up blackboards, bulletin boards, graphs, pictures / photographs , diagrams, specimens and flash cards.

(iii) The modern aids, like, 35 mm film-strip-cum slide projectors, films, film strips and slides were found in very small fraction of Middle

schools. Generally these aids were found in the state of Kerala and in few schools of Uttar Pradesh. Television was found only in 3.6 percent and 1.7 percent of schools in Jammu & Kashmir and Uttar Pradesh respectively. The aids, like, micro-computers, overhead projectors and 16 mm projectors were not available in any of the Middle schools of any state.

(iv) Blackboards, charts, maps and globes were available in more than 50 percent of schools of Jammu & Kashmir. Kerala had blackboards, charts, maps, globes, models and radios. The state of Orissa had blackboards, charts, maps and globes. The state of Uttar Pradesh had blackboards and maps only.

(v) Blackboards were available in highest proportion (98.5 %) in the state of Kerala. In the state of Uttar Pradesh the largest number of schools, i.e., 14 percent were not having even blackboards in them. THe highest average number of workable blackboards per school was 14.8 in the state of Kerala and the lowest 3.5 in the state of Uttar Pradesh. The highest percentage of blackboards, i.e., 40.0 percent were found in non usable condition in the state of Jammu & Kashmir.

(vi) Charts were available in 90.3 percent of schools,the highest, in Kerala whereas the lowest figure, i.e., 31.2 percent was in Uttar Pradesh. Jammu & Kashmir and Kerala had the highest percentages (27.0 %) of charts in non workable condition. Kerala had 19.7 charts per school as against 6.3, the lowest figure, for the state of Orissa.

(vii) The highest proportion of schools having maps was 97.0 percent for Kerala and the lowest, 75.0 percent for Uttar Pradesh. The highest proportion of non usable maps was 34 percent in Jammu & Kashmir. The average number of maps per school was highest (11.3) in the state of Kerala and the lowest figure was 6.2 for each of the states of Jammu & Kashmir and Uttar Pradesh.

(viii) The highest percentage of schools having globes was 95.5 for Kerala and the lowest 36.0 for Uttar Pradesh. The state of Jammu & Kashmir had maximum number (40 %) of globes in non workable condition. The average number of usable globes per school was more or less same for all the four states.

(ix) Models were available in highest proportion (78.3 %) of schools in Kerala and the lowest percentage was 9.1 for Uttar Pradesh. The highest proportion of non workable models was 31.0 percent in Jammu & Kashmir. The highest average number of models per school was 13.2 in Uttar Pradesh and the lowest 2.7 in Orissa.

(x) Radios were available in largest number of schools (68.7 %) in Kerala and the smallest number was (2.6 %) was in Uttar Pradesh. The largest number of radios (47.0 %) were in non workable condition in Jammu & Kashmir.Generally one radio per school was available in all the states.

(xi) The teaching aids referred above were generally available in higher proportions of urban Middle schools as compared to rural Middle schools.

5.2 Secondary / Higher Secondary Schools having Teaching aids and Their Working Condition:

(i) The prominent teaching aids available in more than 50 percent of Secondary / Higher Secondary schools in any of the four states were, blackboards, rollup blackboards, charts, graphs, maps, globes, models, specimens, radios and slides.

(ii) The other teaching aids available between 20 to 50 percent of schools in any of the four states were bulletin boards, pictures / photographs, posters, diagrams, tape recorders, cassettes, 16 mm film projectors, opaque projectors, overhead projectors, 35 mm film-cum-slide

projectors, films and filmstrips.

(iii) The micro-computers as an aid was rarely available in schools. The largest number (6.1%) of schools were in the state of Kerala only.

(iv) Among all the states, Kerala had the largest number of teaching aids, viz., blackboards, rollup blackboards, charts, graphs, maps, globes, models, specimens, radios and slides. Jammu & Kashmir had blackboards, charts, maps, globes, models and radios. The aids available in Orissa were blackboards, rollup black boards, charts, maps, globes and models. The state of Uttar Pradesh had blackboards, charts, maps, globes, models, specimens and radios.

(v) Black boards were available in more than 97.0 percent of schools in all the four states. The state of Jammu & Kashmir had the highest proportion (36.0 %) of black boards not in usable condition. The average number of blackboards per school, i.e., 26.0, was the highest in Kerala and 7.3, the lowest in Orissa.

(vi) The rollup black boards were available in highest proportion, i.e., 86.1 percent of schools in Kerala and the corresponding lowest figure (31.4 %) was of Jammu & Kashmir. The state of Jammu & Kashmir had the highest number (32.0 %) of rollup blackboards in non usable condition. The average number per school was, the highest, 3.8 in the state of Uttar Pradesh and, the lowest, 1.9 in Orissa.

(vii) Charts were available in 98.5 percent of schools, the highest, in Kerala whereas the lowest figure was 85.7 for Jammu & Kashmir. The state of Jammu & Kashmir had the highest number (20.0 %) of non usable charts. The state of Uttar Pradesh had 50.8 as highest average number of usable charts per school whereas the lowest figure of 20.5 was found in Orissa.

(viii) Graphs were available in 69.2 percent of schools, the highest, in the state of Kerala and the lowest figure was 5.7 in Jammu & Kashmir.

The highest number of non usable graphs was 56.0 percent for Jammu & Kashmir. 4.6 was the highest average number per school in the state of Uttar Pradesh and the lowest figure was 1.8 for the state of Orissa.

(ix) The highest number of schools having maps was about 99 percent for the state of Kerala and Uttar Pradesh whereas the lowest figure of 91.4 percent was of Jammu & Kashmir. The highest number of non usable maps (25.0 %) was in Jammu & Kashmir. 31.7 maps was the highest average number per school in Kerala and 13.4, the lowest, for Jammu & Kashmir.

(x) Globes were available in 95.4 percent of schools, the highest, in Kerala and 82.1 percent, the lowest, in the state of Uttar Pradesh. The figure for non usable globes was 26.0 percent in Kerala. The average number of globes per school varied from one to two in all the four states.

(xi) The highest number of schools having models was 93.8 percent in Kerala and the lowest number, 54.4 percent in the state of Orissa. Ten percent of non usable models was the largest figure for Kerala. The highest average number of models (22.5) per school was in Kerala and the lowest figure 8.7 was in the state of Orissa.

(xii) Kerala had the specimens in highest proportions ,i.e., 70.8 percent of schools. The lowest figure was 25.7 percent for Jammu & Kashmir. The largest proportion of non usable specimens was 12.0 percent in Kerala. The highest average usable specimens per school was 50.1 in Uttar Pradesh and the lowest figure was 8.5 in Orissa.

(xiii) Radios were available in largest number of schools (81.5 %) in Kerala and the lowest figure was 42.2 percent in the state of Orissa. The state of Jammu & Kashmir had the highest number of radios (29.0 %) in non working condition. Generally one radio per school was found in all the states.

(xiv) The highest proportion of schools having slides was 56.9 percent in Kerala and the lowest figure 10.0 percent in Orissa. The highest proportion of non usable slides was 17.0 percent in Orissa. The highest average number of slides per school was 36.8 in Uttar Pradesh and the lowest 25.3 in Kerala.

(xv) The common teaching aids as identified were available in larger proportions of Secondary / Higher Secondary schools located in urban areas than that of rural areas.

5.3 Teaching aids Used in Teaching of Different Subjects:

(i) The teaching aids available in 10 percent or more of schools and 50 percent of these schools using them in teaching of physical science at the middle stage were charts, pictures / photographs, maps and models among the four states. The statewise position of aids used in teaching of this subject was ; Jammu & Kashmir - charts ; Kerala - charts, pictures / photographs, maps and models ; Orissa - charts; and Uttar Pradesh - charts.

(ii) The teaching aids used in teaching of biological sciences at the middle stage in any of the four states were charts, pictures / photographs, maps, diagrams, models and specimens. The aids used in different states were; charts and models in Jammu & Kashmir ; charts, pictures / photographs, maps, diagrams, models and specimens in Kerala; and charts in Orissa. The state of Uttar Pradesh had drawn blank in this respect.

(iii) In teaching of mathematics at the middle stage, the teaching aids largely used were charts, graphs, models and flashcards. Only charts were used in the state of Jammu & Kashmir. Charts, graphs, models and flashcards were used in the state of Kerala. Not a single aid was found to be used in the states of Orissa and Uttar Pradesh.

(iv) The teaching aids, generally, used in teaching of social studies

at the middle stage were found to be charts, pictures / photographs, maps and globes. All these four aids were used in the states of Jammu & Kashmir and Kerala. Out of the four, only three aids were used in Orissa and Uttar Pradesh. The state of Orissa used pictures / photographs, maps and globes whereas the state of Uttar Pradesh used charts, maps and globes.

(v) In teaching of language at the middle stage only two aids, viz., charts and flashcards were found to be largely used by the schools in all the four states. The statewise position of using these teaching aids was; Jammu & Kashmir- charts; Kerala- charts and flashcards; Orissa - nil; and Uttar Pradesh -nil.

(vi) In teaching of music, fine arts and home science at the middle stage, not a single aid was found to be used.

(vii) The prominent teaching aids used in teaching of physical sciences at the secondary stage in all the states were found to be charts, pictures / photographs, maps, posters, diagrams, models, specimens, slides, films and filmstrips. The statewise position of using these aids was ; Jammu & Kashmir - charts, models and slides; Kerala - charts, pictures / photographs, maps, posters, diagrams, models, specimens, slides, films and filmstrips ; Orissa - charts and models; and Uttar Pradesh - charts, pictures / photographs , maps, diagrams and models.

(viii) In teaching of biological sciences at the secondary stage, the prominent teaching aids used among the four states were charts, pictures / photographs, maps, posters, diagrams, models, specimens, slides, films and film strips. The state of Jammu & Kashmir used charts, models and specimens. Kerala used charts, pictures / photographs, maps, posters, cartoons, models, specimens, slides, films and film strips. In the state of Orissa only charts, models and specimens were used whereas in the state of Uttar Pradesh charts, pictures / photographs, diagrams, models, specimens

and slides were used.

(ix) At the secondary stage the teaching aids largely used in teaching of mathematics were charts, graphs, models and slides. The statewise position of use of teaching aids was ; Jammu & Kashmir - charts ; Kerala - charts, graphs, diagrams, models and slides ; Orissa - graphs ; and Uttar Pradesh - charts and graphs.

(x) In teaching of social studies at the secondary stage the prominent teaching aids used were charts, graphs, pictures / photographs, maps, posters, globes, models, slides and film strips. Jammu and Kashmir used charts, pictures / photographs, maps and globes. Kerala used charts, graphs, pictures / photographs, maps, posters, diagrams, globes, models, slides and film strips. In the state of Orissa and Uttar Pradesh charts, pictures / photographs, maps and globes were used.

(xi) Among the four states the prominent teaching aids used in teaching of language were charts, pictures / photographs and cassettes. Jammu & Kashmir used only charts while Kerala used charts, pictures / photographs and cassettes. Orissa used only pictures / photographs whereas Uttar Pradesh used only charts in teaching of language.

(xii) Cassettes were the only aid used in teaching of music at the secondary stage in the states of Kerala and Uttar Pradesh only.

(xiii) Charts were the only aid used in teaching of fine arts at the secondary stage that too in the state of Uttar Pradesh alone.

(xiv) In the teaching of home science at the secondary stage the only teaching aid used was charts in the state of Uttar Pradesh.

5.4 Organisation of Other Educational Activities:

(i) The number of Middle schools who organised educational film shows during the year 1985 - 86 was highest (98.5%) in the state of Orissa and

the lowest (63.4%) in the state of Kerala.

(ii) The number of Secondary / Higher Secondary Schools who organised film shows during the year 1985-86 was highest, i.e., 95.6 percent in the state of Orissa and 45.7 percent, the lowest, in the state of Jammu & Kashmir.

(iii) Among all the four states not a single Middle school was found to be a member of any of the film libraries.

(iv) The position of Secondary / Higher Secondary Schools being member of any of the film libraries was nil except for the state of Kerala.

(v) The Middle Schools who organised exhibitions during the year 1985-86 were 52.9 percent, the highest, in Kerala whereas on the other hand Jammu & Kashmir did not have a single Middle School in this regard. The number of exhibitions organised for science were higher than that of social studies. Further, the exhibits displayed in the exhibitions in most of the schools were prepared by the students whereas the exhibits prepared by teachers or other outside agencies were comparatively small .

(vi) The highest number of Secondary / Higher Secondary Schools, who organised the exhibitions during 1985-86, was 67.7 percent in the state of Kerala. Whereas only one school in the state of Jammu & Kashmir organised the exhibitions. The highest number of exhibitions organised catered to science subjects. Here also the majority of exhibits were prepared by the students.

(vii) The proportions of schools organising field trips for classes V to X were the highest (ranging from 45.4 to 64.6) in the state of Kerala. The corresponding lowest figures (ranging from 1.7 to 11.7 for classes VI to X) were of Jammu & Kashmir. The largest number of field trips were catering to general education in the states of Kerala and Uttar Pradesh. Orissa organised the highest number of field trips for social studies.

(viii) Museums were available in 7 (5.2 %) of Middle Schools of Kerala and one Middle School each in Orissa and Uttar Pradesh.

(ix) Only two states, viz., Kerala and Uttar Pradesh had museums in 7.7 and 9.9 percent of secondary / higher secondary schools respectively.

5.5 Procurement of Teaching aids:

(i) The highest proportion of Middle Schools procuring teaching aids following different procedures were - 27.7 percent by the head of institution in the state of Jammu & Kashmir, 29.1 percent by a committee in the state of Kerala. 53.2 percent by a committee in the state of Orissa and 37.8 percent through subject teachers in the state of Uttar Pradesh.

(ii) The highest proportion of Secondary / Higher Secondary Schools procuring teaching aids was through a committee. The figures were 48.6, 46.1, 70.9 and 64.2 percent for the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively.

5.6 Maintenance of Teaching aids Records:

(i) The highest proportion of middle schools who were maintaining records of teaching aids was 36.0 percent in Kerala and lowest 1.0 percent in Orissa. The number of schools maintaining upto date list of teaching aids was highest (65%) in Kerala.

(ii) The highest number of Secondary / Higher Secondary Schools maintaining records of teaching aids was 54 percent in the state of Jammu & Kashmir and lowest, 4 percent in the state of Orissa. The highest number of schools who maintained upto date list of teaching aids was 89 percent in Kerala.

(iii) The highest number of middle schools maintaining stock register for teaching aids was 89.2 percent in Uttar Pradesh and the lowest number , 61.4 percent in Jammu & Kashmir.

(iv) The secondary /higher secondary schools maintaining stock register were found to be highest (86.4 %) in the state of Uttar Pradesh and the lowest, 72.4 percent in Orissa.

5.7 Maintenance Servicing of Teaching aids Equipments:

(i) Among the four states, the state of Jammu & Kashmir had the largest proportion, i.e., 40 percent of Middle Schools who were not having any kind of maintenance services on adhoc or regular basis, for the radios available with them.

(ii) The number of Secondary / Higher Secondary Schools having radios in them in the state of Jammu & Kashmir had the largest proportion i.e., 31 percent who did not have any kind of servicing arrangements.

(iii) Among the four states, Kerala and Uttar Pradesh had tape recorders in Middle Schools. About 40 percent in Kerala and 83 percent in Uttar Pradesh had servicing arrangements on adhoc or regular basis.

(iv) The Secondary / Higher Secondary Schools having servicing arrangement for tape recorders were approximately 95 percent in Kerala and Uttar Pradesh, these proportions were 50.0 and 83.3 percent for Jammu & Kashmir and Orissa respectively.

(v) The Secondary / Higher Secondary Schools having televisions had servicing arrangements in 25.0, 87.5, 100.0 and 87.8 percent of them for the states of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively.

(vi) The number of Secondary / Higher Secondary Schools possessing projectors had servicing arrangements in zero percent, 50 percent, 33 percent and 54 percent in the state of Jammu & Kashmir, Kerala, Orissa and Uttar Pradesh respectively.

5.8 Expenditure on Teaching aids and Fee Charged from Students:

(i) The proportions of Middle Schools incurring expenditure on teaching aids were the highest (60.4, 62.0 and 60.4 percent) in Kerala and the lowest (6.9, 7.1 and 8.4 percent) in Uttar Pradesh during the years 1983-84, 1984-85 and 1985-86 respectively.

(ii) The number of Middle Schools charging separate fee for teaching aids from students was highest, 60.4 percent in Kerala whereas no such fee was charged by the schools of Jammu & Kashmir.

(iii) The number of Secondary / Higher Secondary Schools incurring expenditure on teaching aids was the highest (76.9, 69.2 and 73.8 percent) in Kerala and the lowest (22.6, 22.6 and 36.5 percent) in Orissa for the years 1983-84, 1984-85 and 1985-86 respectively.

(iv) In the state of Kerala the highest number of Secondary / Higher Secondary Schools, i.e., 38.5 percent charged separate fee for teaching aids whereas the state of Jammu & Kashmir was not charging any such fee.

5.9 Schools having Room / Hall for Projection Purposes:

(i) The number of Middle Schools having room / hall for projection purposes was the highest, i.e., about 20 percent in the states of Kerala and Orissa and the lowest, 6.0 percent in Uttar Pradesh.

(ii) The highest proportion of Secondary / Higher Secondary Schools having room / hall for projection purposes was 50.8 percent in Kerala and lowest, 24.9 percent in Uttar Pradesh.

5.10 Schools having Teaching aids Room:

(i) The highest number of Middle Schools having separate teaching aids room was 6.0 percent in Uttar Pradesh and the lowest, 1.5 percent in Orissa.

(ii) The number of Secondary / Higher Secondary Schools having separate teaching aids room was the highest, i.e., 47.7 percent in Kerala

and the lowest, i.e., 1.2 percent in Jammu & Kashmir.

5.11 Teachers Undergone Inservice Training in Teaching aids:

(i) The number of Middle Schools having at least one teacher who had undergone inservice training programme for preparation of teaching aids was 10.7 percent, the highest, in Kerala and 3.4 percent, the lowest, in Orissa.

(ii) The largest number of Secondary / Higher Secondary Schools having teachers trained in preparation of teaching aids was 23.1 percent in the state of Kerala whereas only one school each in the states of Jammu & Kashmir and Orissa was found.

AN INTENSIVE STUDY OF TEACHING AIDS AT MIDDLE AND SECONDARY STAGES OF THE SCHOOL

A QUESTIONNAIRE

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

An Intensive Study of Teaching Aids
at
Middle and Secondary Stages of the School

A QUESTIONNAIRE

	STATE	DISTT	SCHOOL		
SCHOOL I D.					

(For office use only)

Department of Measurement, Evaluation, Survey and Data Processing
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING
Shri Aurobindo Marg, New Delhi 110016

Instructions for filling in the Questionnaire

The questionnaire enclosed herewith relates to the project "An Intensive Study of Teaching Aids at Middle and Secondary stages of the School." The information for each and every item in the questionnaire is to be provided by the Principal/Headmaster of the recognised school with the help of the teacher(s) teaching at the Middle and Secondary stages. To facilitate the process of filling in the information certain points are mentioned below. Please read them carefully before filling up the questionnaire.

1. The middle and secondary stage in the present context may be a part of middle school, secondary school or Higher Secondary School according to the State pattern. The middle schools are required to provide information for middle stage only whereas the Secondary/Higher Secondary Schools have to provide information about middle as well as Secondary stage available in them.

2. The filled in questionnaire is to be processed with the help of electronic computer. It is therefore necessary to provide the required information in exact and accurate manner in the specified form indicated as the following.

The items provided in the questionnaire are generally of three types, namely, (a) multiple choice type, (b) quantitative information type, (c) descriptive information type. The procedure for providing responses with respect to each of them is as under:

(a) Items of multiple choice type Possible response choices are provided against each of the items. Please choose the most appropriate choice applicable to your school and put a tick mark (√) in the bracket provided against the same.

(b) Items of quantitative information type A number of squares are provided against such items to obtain information in numerical form. The information is to be provided only in Arabic Numerals, i.e., 0, 1, 2, 3, ...9. The numerical digits are to be entered starting from right hand side by entering one digit in one square. The remaining squares on the left hand side, if blank, are to be filled in with Zeros. For example in item 9(a) (ii) four blank squares have been provided to enter the total enrolment at middle stage in the school. If enrolment of a particular school is in 3 digits, says, 785 then the same is to be entered as | 0 | 7 | 8 | 5 |

(c) Items of descriptive information type Information in certain items have been asked in open ended form. Responses to such items should be described/mentioned specifically to the point and in a brief manner.

3. Item 5: All schools run by State Government, Central Government, Public Undertaking and autonomous organisations completely financed by the government will be treated as Government schools. All schools run by Municipal Corporation, Municipal Committees, notified area Committees, Zila Parishad, Panchayat Samitees, Contonement Boards etc., will be treated as local body schools.

4. Items 6: A school is "A school for boys" if boys are admitted to all classes and admission for girls is restricted to some specific classes only. A school is "A school for Girls", if girls are admitted to all classes and admission for boys is restricted to some specific classes only. A school is co-educational if boys and girls are admitted to all classes of the school.

5. Item 9. When all the students in a class cannot be accommodated in one section then they are allocated suitably to different sections, like, section A, section B, etc., for the purposes of classroom instructions. The total number of sections are to be arrived at by adding the classwise number of sections for all the concerned classes at middle and secondary stages respectively.

6. Item 10: The teaching aids other than those already provided in the text books are listed. The total number of each of them available in your school and out of these how many are in working condition are to be mentioned in separate columns. In order to help the respondent a few definitions are provided separately.

DEFINITIONS

Chart: Charts are combinations of graphic and pictorial media designed for visualising relationships between key facts and ideas in an orderly and logical way Such as flow charts, tabular charts, tree charts, etc.

Graph· Graph is a visual representations of numerical data Such as line graphs, bar graphs, pai graphs, pictorial graphs, etc

Poster Poster is a visual combination of bold design, colour and message which is intended to catch and hold the attention of the passer by long enough to implant a significant idea in his mind.

Diagram Diagram is a condensed drawing consisting primarily of lines and symbols designed to show interrelationships, general outlines, or key features of a process, object or area

Cartoon. Cartoon is a pictorial representation of a person, idea, or situation that is designed to influence public opinion Generally it depicts satire, exaggeration, symbolism and humour of a sort

Model A model is recognizable imitation of the real thing, probably made of wood, plastic or mental in miniature form.

Mock up. Mock up is an imitation of a real thing In this some fundamental elements of the real thing are purposely eliminated in order to focus attention upon others

An Intensive Study of Teaching Aids at Middle and Secondary Stages of School

1. Name and full address of the school ……………………………………
……………………………………
……………………………………

PIN ☐☐☐☐☐☐

2. District ……………………………………
3. State ……………………………………

4. Area where school is located : (i) Rural ( )
(ii) Urban ( )

5 Management of school
(i) Government ( )
(ii) Local Body ( )
(iii) Private Aided ( )
(iv) Private unaided ( )

6. Type of school
(i) Boys ( )
(ii) Girls ( )
(iii) Co-educational ( )

7 Year of establishment
(i) As Middle School ☐☐☐☐
(ii) As Secondary School ☐☐☐☐

8 (a) Classes taught
(i) From class (starting) ☐
(ii) to class (ending) ☐☐

(b) Total number of Sections in the school ☐☐

9 (a) At Middle stage
(i) Number of sections ☐☐
(ii) Total enrolment ☐☐☐☐

(b) At Secondary Stage
(i) Number of sections ☐☐
(ii) Total enrolment ☐☐☐☐

10 Following is the list of teaching aids generally used in classroom teaching. Please indicate the number of each aid available and number of those which are in working order. (In case the information is nil, a cross (×) may be marked).

S No.	*Aid*	*Number available*	*No in working order*
1	Black boards	☐☐	☐☐
2	Roll up black boards	☐☐	☐☐
3.	Bulletin boards	☐☐	☐☐
4	Flannel Boards	☐☐	☐☐
5	Flannel graphs	☐☐	☐☐
6	Charts	☐☐☐	☐☐☐
7.	Graphs	☐☐	☐☐
8	Pictures/Photographs	☐☐	☐☐
9	maps	☐☐	☐☐
10	Posters	☐☐	☐☐
11	Diagrams	☐☐	☐☐
12	Cartoons	☐☐	☐☐
13	Comic Strips	☐☐	☐☐
14.	Globe	☐☐	☐☐
15.	Models	☐☐	☐☐

S.No.	Aid	Number available	No. in working order
16.	Specimens	☐☐☐	☐☐☐
17	Mockups	☐☐	☐☐
18.	Puppets	☐☐	☐☐
19.	Radios	☐☐	☐☐
20	Tape recorders	☐☐	☐☐
21.	Cassettes	☐☐	☐☐
22	16mm Film Projectors	☐☐	☐☐
23.	Opaque projectors/Epidiascope	☐☐	☐☐
24.	Over head projectors	☐☐	☐☐
25.	35mm Film strip-cum-Slide Projector	☐☐	☐☐
26.	Slides	☐☐	☐☐
27.	Flash Cards	☐☐	☐☐
28	Films	☐☐	☐☐
29.	Film strips	☐☐	☐☐
30.	Televisions	☐☐	☐☐
31.	Video Cassette players/recorders	☐☐	☐☐
32.	Video Cassettes	☐☐	☐☐
33.	Micro-Computers	☐☐	☐☐
34	Floppy diskets	☐☐	☐☐
35	Any other (Specity)	☐☐	☐☐

ITEM 11. Please mention the No. of teaching aids (in working order) available for Middle and Secondary Stage for each group of subject(s) (Cross out the ones which are not available)

S.No	*Aid*	*Languages*	*Mathematics*	*Social Studies*	*Physical Science*	*Biological Science*	*Home Science*	*Music*	*Fine Arts*
1.	Charts	☐☐	☐☐	☐☐	☐☐	☐☐☐	☐☐	☐☐	☐☐
2.	Graphs	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
3.	Pictures/ Photographs	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
4	Maps	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
5	Posters	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
6	Diagrams	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
7.	Cartoons	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
8	Comicstrips	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
9.	Globes	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
10.	Models	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
11	Specimens	☐☐	☐☐	☐☐	☐☐	☐☐☐	☐☐	☐☐	☐☐
12.	Mock-ups	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
13.	Puppets	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
14	Cassettes	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
15	Slides	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐

S.No	Aid	Languages	Mathematics	Social Studies	Physical Science	Biological Science	Home Science	Music	Fine Arts
16.	Flash Cards	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
17	Films	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
18	Film Strips	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
19	Video Cassettes	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐

ITEM 12: In classroom teaching at middle and secondary stages the following **teaching aids are generally used. Please** indicate for each subject(s) separately their usage in terms of numerical digits as: 1-*Frequently*, 2-*Sometimes*, 3-*Rarely*, and 4 *Never* in the square provided for

S.No	Aid	Languages	Mathematics	Social Studies	Physical Science	Biological Science	Home Science	Music	Fine Arts
1	Charts	☐	☐	☐	☐	☐	☐	☐	☐
2.	Graphs	☐	☐	☐	☐	☐	☐	☐	☐
3	Pictures/ Photographs	☐	☐	☐	☐	☐	☐	☐	☐
4	Maps	☐	☐	☐	☐	☐	☐	☐	☐
5	Posters	☐	☐	☐	☐	☐	☐	☐	☐
6	Diagrams	☐	☐	☐	☐	☐	☐	☐	☐
7.	Cartoons	☐	☐	☐	☐	☐	☐	☐	☐
8	Comic strips	☐	☐	☐	☐	☐	☐	☐	☐
9	Globes	☐	☐	☐	☐	☐	☐	☐	☐

S No.	Aid	*Languages*	*Mathematics*	*Social Studies*	*Physical Science*	*Biological Science*	*Home Science*	*Music*	*Fine Arts*
10	Models	☐	☐	☐	☐	☐	☐	☐	☐
11.	Specimens	☐	☐	☐	☐	☐	☐	☐	☐
12	Mock-ups	☐	☐	☐	☐	☐	☐	☐	☐
13	Puppets	☐	☐	☐	☐	☐	☐	☐	☐
14	Cassettes	☐	☐	☐	☐	☐	☐	☐	☐
15	Slides	☐	☐	☐	☐	☐	☐	☐	☐
16	Flash Cards	☐	☐	☐	☐	☐	☐	☐	☐
17	Films	☐	☐	☐	☐	☐	☐	☐	☐
18	Film Strips	☐	☐	☐	☐	☐	☐	☐	☐
19	Video Cassettes	☐	☐	☐	☐	☐	☐	☐	☐

13 Whether records are maintained in respect of issue and receipt of teaching aids?

(i) Yes ( )

(ii) No ( )

14. Is an uptodate list of teaching aids available in the school?

(i) Yes ( )

(ii) No ( )

15 How many times educational film shows were organised during the whole session 1985-86?

(i) None ( )
(ii) One ( )
(iii) Two ( )
(iv) More than two ( )

16 (a) Has the school organised field trips during the school session 1985-86?

(i) Yes ( )
(ii) No ( )

(b) If yes please indicate the number of times these field trips were organised for different classes and subjects catered to.

Class	*No. of times*	*Subjects the trips catered to*
V	☐	
VI	☐	
VII	☐	
VIII	☐	
IX	☐	
X	☐	

17.(a) Has the school organised exhibition during the school session 1985-86?
(i) Yes ( )
(ii) No ( )
(b) If yes, subjects/streams it was organised for
(i) Science ( )
(ii) Social Studies ( )
(iii) Any other (Specify) (....).

(c) Whether the exhibits displayed were prepared by
(i) Students ( )
(ii) Teachers ( )
(iii) Outside agencies ( )

18 (a) Is there a museum in the school?
(i) Yes ( )
(ii) No ( )

(b) If yes, number of specimens in the museum ☐☐☐

19 Mention the types of teaching aids prepared by teachers and students separately

S. No	*Teaching aids prepared by Teachers*	*S No*	*Teaching aids prepared by Students*
1		1	
2		2	
3		3	
4.		4	
5.		5	
6		6	

20 The teaching aids are purchased on the suggestion of
(i) the head of the institution ( )
(ii) subject teachers ( )
(iii) a committee ( )
(iv) Any other (specify) . . . ( )

21 (a) Does the school maintain a stock register for teaching aids?
(i) Yes ( )
(ii) No ( )

(b) How often is the physical verification of teaching aids done?
(i) Once a year ( )
(ii) Once in two years ( )
(iii) Once in three years ( )
(iv) Never ( )

22 How the maintenance services of following equipments are done?

Equipments	*Regular Service Contract*	*Adhoc Service*
(i) Radio	( )	( )
(ii) Tape recorders	( )	( )
(iii) Televisions	( )	( )
(iv) Projectors	( )	( )

23 Does the school charge separate fee for teaching aids?
(i) Yes ( )
(ii) No ( )

24 Give expenditure incurred during last 3 years on teaching aids

	1983-84	1984 85	1985-86
Amount in rupees	☐☐☐☐	☐☐☐☐	☐☐☐☐

25. (a) Is the school a member of any Film Library?
(i) Yes ( )
(ii) No ( )

(b) If yes, please mention the name(s) of the film libraries and films borrowed during 1985-86

Name of the Library	*No. of films borrowed*
(1) . .	☐☐
(2)	☐☐
(3)	☐☐

26. How many teachers of your school have undergone inservice training programme for preparation of teaching aids? ☐☐

27(a) Is there any room/hall in the school for projection purposes?
(i) Yes ( )
(ii) No ( )

(b) If yes give seating capacity of room/hall ☐☐☐

(c) If yes in (a), does the room/hall have adequate provision/arrangements, (electric points, darkening etc.) required for projection

(i) Yes ( )
(ii) No ( )

28(a) Is there any particular room specified as teaching aids/audio visual room in the school?

(i) Yes ( )
(ii) No ( )

(b) If no, please indicate as to how the teaching aids material/equipments are located?

(i) One place ( )
(ii) Common aids at one place and subject-wise aids at different places ( )
(iii) No specific place is fixed ( )

29. Name the subject-wise teaching aids and equipments needed in your school

Stage	*Subjects*	*Teaching aids*	*Equipments*
Middle			
	1 Languages		
	2. Mathematics		
	3 Social Studies		
	4. Physical Sciences		
	5. Biological Sciences		
Secondary			
	1. Languages		
	2. Mathematics		
	3 Social Studies		
	4 Physical Sciences		
	5 Biological Sciences		

Signature of the
Principal/Headmaster

National Council of E[illegible]onal
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